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ORIGINAL COMMUNICATIONS.

ARTICLE I.

THE PRE-ALBUMINURIC STAGE OF CHRONIC BRIGHT'S DISEASE.

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The more closely one studies the clinical history of chronic Bright's disease, the more apparent it becomes that in its early stages albumen is quite often absent from the urine.

That I may not subsequently be misunderstood by confusion of terms, I will here premise, that what I shall have to say upon this subject is intended to apply only to that group of clinical symptoms which are accompanied or preceded by the granular kidney. Such a condition of the kidney may exist; nay, it may even pass through all the stages of contraction, with its usual clinical symptoms, till death results, without albumen making its appearance in the urine. Such cases are by no means rare, as the records of post-mortem rooms in our hospitals demonstrate, which I shall later on amply verify.

Furthermore, I am convinced that a well-defined pre-albuminuric stage of renal cirrhosis exists, which it is possible to make out, by well-defined and more constant symptoms, than that of the presence of albumen in the urine. This idea is by no means new, but has been long suspected, and is making itself felt with increasing force each year, if we are to judge from the increasing contributions to the literature of the subject, which have appeared within the past fifteen years. *

It has become the dictum since the days of Bright, to hinge the diagnosis of all diseases bearing his name on the one symptom, namely, the presence of albumen in the urine. Now the diagnosis of Bright's disease embraces a much more comprehensive investigation of facts and data than the mere search for albumen, the neglect of which leads daily to very unfortunate results.

Our life insurance companies are imposed upon frequently through incomplete so-called examinations of patients whose risks are passed as "first-class" (and some of them are literally so), upon the almost sole presumption, so far as the kidneys are concerned, that no disease exists because no albumen is present in the urine. Many of these cases are hurrying on to contracted renal organs, uremia, and death, which can at best be postponed but a short time. Nor is this picture an overdrawn one, as the following case illustrates. A year since a man made application to one of our leading insurance companies for insurance on his life. The medical officer representing the company found a slight trace of albumen in his urine, and he was referred to me. Atheromatous vessels, which had a year ago been manifest through an obstinate epistaxis, showed the usual degenerative

* Contributions on this subject, by Drs. Southy, Burdon-Sanderson, Mahomed, Saundby, and others, have appeared.

changes accompanying renal cirrhosis, to have been in progress for some time. Fig. 1 shows his pulse tracing, which is characteristic.

Fig. 1.

He was put under treatment, and properly restricted dietary, and told that his disease was incurable, but with care he might live some months, or perhaps years.

During my absence abroad, this man applied to another company for insurance, and was passed by the medical officer, and his life was insured for $8,000. His kidney disease is now slowly but surely advancing towards renal atrophy; and this is by no means the first case of the kind which has come under my notice.

In the days when I looked upon the presence of albuminous urine as the essential diagnostic symptom of renal disease, I have watched cases closely *for years*, suspecting the stealthy approach of cirrhotic kidneys, but was lulled into contentment by an occasional examination of urine, which was found to be free from albumen, till at length an attack of renal dyspnœa, or some other evidence of the disease, had pointed out that which I had suspected had really been going on under my very eyes. I have just now in mind a case which I had watched and suspected for nearly two years, but never could find a trace of albumen in the urine. Gastro-intestinal disturbances at length appeared, and finally a severe and prolonged attack of recurrent dyspnœa aroused me to the realization that my patient was suffering from renal cirrhosis; and subsequent autopsy proved the correctness of the diagnosis. Now I do

not wish to be understood as underestimating the value of albuminuria as a symptom of renal disease; on the contrary, *when present*, I attach the greatest importance to it, under certain conditions. But what I contend for is that when albumen is absent from the urine it does not prove that no renal disease is present. In other words, it is misleading to teach that the diagnosis should hinge upon this symptom alone. The form of renal disease under consideration is the very one in which albumen is most likely to be absent.

It is to be feared that our recent rapid advance in pathological knowledge may have tended to incline medical thought too closely to the structural to the expense of the general disorder. In other words, the seat of disease itself is scanned most minutely and laboriously, perhaps at the expense of less reliance on the good old clinical methods of investigation; for one of our great teachers has said: "After all, pathology is only a study of results, *not causes*, of disease."

It was long ago noted by writers that in certain numbers of cases of renal disease, albumen disappeared from the urine. Indeed, this did not escape the attention of Richard Bright himself, who was the first to note this circumstance. But others, among them Christoson, Rayer, Rees and Malmsten, confirmed the observation.

More recent authors point out that the cirrhotic form is the one in which this condition is noted, and pretty much all of them agree that in the early stages albumen is quite likely to be absent from the urine.

Professor Grainger Stewart, in his admirable work on "Bright's Disease," page 188, says, referring to cirrhosis of the kidney: "The early symptoms are very slight, such indeed as might easily escape notice. I have seen several cases in which the renal lesion was sufficiently distinct on post-mortem

examination, but in which there had been no albuminuria and no dropsy during life;" and again, page 189, he writes: "In the early stages (of cirrhosis) albumen is occasionally present, generally in very small quantity. One day it may be distinct, but the next day we search for it in vain."

Dr. Roberts, in his last edition, says: "But it must be admitted that chronic degeneration of the kidneys, not distinguishable from some forms of Bright's disease, does exist under certain circumstances, without albuminuria."

Bartels says (Ziemssen's Cyclopedia, page 431, Vol. XV.): "It is these cases of genuine contracting kidney, that urine is occasionally excreted, which is in no way to be distinguished from that secreted by healthy kidneys;" and again, on the same page, 435–436, he adds: "But albuminuria, as later experiences in this direction have taught me, is no constant symptom in this affection. The temporary absence of albumen, I have witnessed repeatedly,—for purpose of diagnosis, the matter is one which deserves to be detailed at greater length." On page 440 he cites a case which came under his care in the hospital, and continued under treatment, from Jan. 26th till death, March 3rd, and though both kidneys proved to be cirrhotic and extremely contracted at the autopsy, he says: "Albumen was entirely absent from the urine throughout."

Dr. Geo. Johnson, in his "Lectures on Bright's Disease," page 52, says: "The amount of albumen varies considerably. Absent or scanty in the early stage, it may be rather copious in the middle periods, and again scanty, or even entirely absent, in the stage of extreme degeneration of the kidney."

Dr. Dickinson, in his "Treatise on Albuminuria," says, in referring to the urine in the early stage of granular degeneration: "If examined in this early stage, it may be found perfectly free from albumen, or may contain only a minute trace, or, a

trace only after food, or on getting up in the morning;" and again he observes: "Early in this disease, the urine is free, both from albumen and casts; later on, a trace of albumen appears, which may not be discoverable until the constitutional symptoms are such as to indicate an advanced stage of the disease. So little albumen may be present, even to the end, that care is needed for its detection. And even that little may not be constant, but discoverable only after sleep, or meals."

Dr. Tyson, in his work on "Bright's Disease and Diabetes," page 178, says, in referring to the urine in cases of interstitial nephritis: "The albumen is small in amount, and may be temporarily absent, or it may be absent before a meal, and present after it."

Dr. Millard, in his treatise on "Bright's Disease," page 141, says: "The fact is, however, that in chronic nephritis, especially the interstitial, the appearance of albumen is often preceded for considerable, and even for a very long time, by morbific changes in the kidney, which are not recognized until the appearance of albumen. Indeed, nephritis may exist to such an extent as to produce even cirrhosis, without albumen *ever* making its appearance in the urine." He also very correctly adds, (page 143): "To rely upon albumen, solely as a means of determining the existence or non-existence of nephritis, is to rely upon an *ignis fatuus*. It is at best a coarse and primitive test of its presence; insufficient in itself, and unsatisfactory in comparison with more searching and absolutely accurate means of diagnosis." Dr. Millard cites several cases in his experience, wherein albumen was entirely absent from the urine, throughout the course of renal cirrhosis; and, indeed, he devotes a special chapter to the consideration of "Nephritis without Albuminuria;" which is well worthy of careful perusal.

In "*Guy's Hospital Reports*," for 1879, (page 367) will be

found an analysis of one hundred cases of granular kidneys, observed in that hospital, previous to that year. Out of the hundred cases noted, the very large proportion of seventy-four were characterized by the absence of albumen from the urine. Dr. Saundby, on "Occurrence of Dropsy in Granular Kidney," introduces a table showing the diagnosis—which was sent down from the wards, to the post-mortem room, at the Birmingham General Hospital*—in ninety-eight cases, in all of which, the kidneys proved to be granular. Out of these ninety-eight, only twenty-two were sent down with the diagnosis of Bright's disease. Hence, we may fairly assume, that in seventy-six of them, albumen was not discovered in the urine. Again, Dr. Mahomed collected the records of sixty-one cases treated in Guy's Hospital during the two years 1879 and 1880.† In forty-one of these, albumen was never discovered in the urine. Now, putting these statistics together, we have two hundred and fifty-nine cases of chronic Bright's disease, in which albumen was present in the urine only in sixty-eight cases, leaving one hundred and ninety-one cases, or about seventy-four per cent., in which albumen was absent. These cases can be open to little question, for, be it remembered, they were all hospital cases, subject to the usual rules for daily examinations of urine, and the diagnoses *in all* were confirmed by autopsy.

In the light of such unanswerable testimony as the foregoing, I maintain that the mere absence of albumen from the urine, constitutes no reliable evidence of the non-existence of chronic Bright's disease, and above all in its early stages. If clinical evidence, conjoined with post-mortem examination of our cases, teaches us anything, it is, that this disease may exist, and progress through years, without giving rise to albuminous

* Birmingham Medical Review, April, 1881.

† Guy's Hospital Reports, Vol. XXV, 1880 and 1881, pages 304 and 305.

urine; and therefore, a clinical symptom so notoriously inconstant and unreliable, even in the fully formed stages of the disease, constitutes the most flimsy evidence upon which to construct the diagnosis of a disease, the most insidious and silent in its early advances of any with which medical science has to deal.

In many instances chronic Bright's disease is a condition in which its early steps have been so slow and imperceptible that half the lifetime of the individual has been consumed in leading up to it through continuous functional overtaxing of the gland before any marked textural changes can be made out; yet, in this early stage, other evidences of the disease are to be found, which, taken collectively, will establish the diagnosis in the majority of cases.

I do not mean to say that absolutely the first departure from the normal condition is to be made out, for from the very nature of the first changes in the gland, it is probable that these escape detection. But I hold that during that stage in which no appreciable change can be made out in the renal epithelium (which may extend over years), albumen, as a rule, is absent from the urine, and yet, through other symptoms, the presence of the disease may often be revealed.

I have examined, microscopically, many sections of cirrhotic kidneys, including those in my own collection and in the Pathological Laboratory at Aberdeen, as well as in other places, and in the early stages of this disease I find little, if any, departure from the normal in the tubular epithelium. The earliest changes which I am able to make out, seem to be slight thickening of Bowman's capsule, sparse septa of apparently new connective tissue creeping in at varying points from the capsule and between the interlobular arteries, as well as increased thickness of the coats of the small arterial vessels. I

have compared, side by side, sections of early cirrhotic kidneys with those of normal, with the view of ascertaining the true condition of the epithelium lining the convoluted tubes in the former, and I cannot see that it varies essentially from the normal. It is misleading to speak of cloudiness of the renal epithelium. That is the normal condition, it is never clear unless cleared by some chemical agent. The very first change I am able to make out is the presence of some fat globules in the epithelial cells, and perhaps a slight flattening of the latter, so that the lumen of the tube is somewhat more open. Desquamation of the epithelium, if it ever occurs in this disease, certainly does not do so in this early stage.

Bartels says: "This much, however, I believe to be beyond all doubt, namely, that genuine renal contraction—the so-called third stage of Bright's disease of our (German) writers, Grainger Stewart's cirrhosis of the kidney, is the result of a primary growth or proliferation of the intertubular connective tissue." Dr. Dickinson, in his treatise on "Albuminuria," says: "I have examined these cells (tubular epithelial) in a great number of granular kidneys, and have carefully drawn their outlines and dimensions, as seen through an one-eighth inch object-glass. The conclusion I long ago formed, one which has been justified by careful and continued observation, is this: In the vast majority of cases, in all cases excepting those in which the contraction of the organ has become extreme, *the epithelium is exactly such as is found in healthy kidneys.*"

Charcot, in his "Lectures on Bright's Disease of the Kidneys," describes minutely the changes found in what he terms the "first stages of interstitial nephritis," as follows: "From the commencement the connective stroma is infiltrated with a more or less considerable quantity of small cellular elements, which, following the theory adopted, are called leucocytes or

embryonic cells. To this cell infiltration is due the grayish yellow color sometimes presented by the kidney at this stage of the disease. Another characteristic revealed by histological study is, that at this period the tubular apparatus of the kidney presents no appreciable alteration; the epithelium in the convoluted tubes *is in its place, and perfectly healthy.*"

This, then, explains the non-appearance of albumen in the urine during the early stage of granular kidney, for pathological and clinical evidence shows that those diseases which cause destruction of the renal epithelium are the ones which give rise to the most constant and profuse amount of albuminuria.

On this point Senator says: "The normal functions of epithelial cells is assigned as the reason for the absence of albumen in the secretion of the liver, the most prominent of the second class of glands, and likewise in the secretions of the perspiratory and lachrymal glands, supposing it to be the case that these latter secretions in their pure state are really non-albuminous. If the urine be regarded simply as a true non-albuminous glandular secretion, the epithelium must be credited with the function of preventing the escape of albumen from the blood. Even if the urine be regarded as a mixture of a transudation with a glandular secretion, the latter at least being the produce of the epithelium of the uriniferous tubes, must for the same reason be considered to be non-albuminous; whatever view may be entertained as to the presence or absence of albumen in the transudation from the glomerular vessels. The conclusion is forced upon us, that when their nutrition and functions are disturbed, or when the epithelial cells of the uriniferous tubes are in a state of complete decay, albumen will escape from the blood and lymph, and show itself in the urine hitherto apparently non-albuminous; that is, that albuminuria will become developed. Observations which are alleged to prove the

contrary must be based upon error or defective investigation, for if not, all our doctrines with regard to specific glandular secretion must be thrown to the winds."

It may be asked, then, if the renal epithelium is not the seat of any degenerative change in renal cirrhosis? How does it happen that albumen *is* present in the urine *sometimes* in the course of the disease?

We answer, that the latter is due to increased intra-vascular pressure, which is brought about as a legitimate outgrowth of the disease.

It has been established, beyond doubt, that increased blood pressure within the vessels, will, under certain conditions, cause albumen to appear in the urine. J. B. Stockvis showed by extended experimental and clinical investigations, that alterations of the circulation which checks the afflux of arterial, or the escape of venous blood, causes albumen to pass into the urine. In other words, over-fullness of the venous circulation, or slowing of the current, produces albuminuria Since, however, other observers, and especially Senator, has pointed out that high pressure in the arterial vessels will also cause albuminuria, though to a less extent.

Active muscular exertion is accompanied by an increase of the muscular power of the heart's action by about twenty-five per cent., hence, the intra-vascular pressure is increased to that extent in the arteries, and it is no uncommon thing to find albumen in the urine of healthy men, who are undergoing active muscular exercise. Heat also causes a direct rise in the arterial blood pressure, as shown by the dilated, and turgescent vessels everywhere; as a consequence of this, we often note appearance of albumen in the urine during febrile conditions. Senator proved the proposition by the following experiments. He introduced rabbits into an oven, constructed for the pur-

pose, previously having drawn off their urine, and testing it for albumen. He then slowly increased the heat in the chamber, and again tested the urine, and he states as to these experiments, many times repeated, that, "The result in all cases was the production of albuminuria, when the bodily temperature had been increased by 1.5°–3°C., with sufficient rapidity, or the heat continued for a sufficient length of time."

It may be observed that heat, or any other agent, *suddenly applied*, which raises the arterial pressure, causes a contraction of the capillaries which resists the increased pressure, and albumen does not transude under such circumstances. The pressure must be gradual to cause albuminuria. We have many examples of the production of albuminuria by intravenous pressure. Bartels relates a case bearing on this point. It was one in which there was impeded escape of the blood of the renal vein, in consequence of thrombosis of the inferior vena cava, occurring in a very robust man, forty-four years of age. Bartels says: "This patient passed *enormous quantities* of urine, and with a specific gravity varying from 1.011 to 1.013, and always containing albumen!" The occurrence of albumen in the urine as a consequence of valvular lesions of the heart, is another well known example of this kind, leading to what has been called cyanotic induration of the kidney; a condition, by the way, very similar to renal cirrhosis.

Thus it may be laid down as a rule, that intra-vascular pressure, whether arterial or venous, if only of sufficient extent, is likely to result in albuminuria.

Now, in the advanced stage of granular kidney, we have at least two conditions which lead up to increased blood pressure, and especially so within the glomerular vessels. First, hypertrophy of the left ventricle of the heart (almost uniformly present), and even before this occurs, increased power of the

heart's action, resulting from the causes which lead up to hypertrophy. Second, anatomical changes in the kidney, which obstruct the outflow from the glomerular tuft of vessels. In order more clearly to appreciate the latter, let us first glance at the vascular arrangement in the cortex, and see how it is effected by the advancing pathological changes of granular degeneration of the kidney. The interlobular arteries, as they pass upwards towards the cortex, give off directly on either side lateral branches, the afferent arterioles, each one of which on entering a Malpighian capsule, breaks up into the capillaries composing the glomerular tuft. Now the afferent vessel of the Malpighian body, after uniting with the vessels of the tuft, pass out of Bowman's capsule, and immediately *again* sub-divide into a network of capillary blood vessels, which entwine in all directions, the convoluted tubules. This network anastomoses freely also with the capillaries of the medullary rays, forming one common net-work of the whole cortex. Now, we have before noted that the first observable pathological change in the cirrhotic kidney, is a proliferation of new connective tissue cells between and among the intertubular capillary plexus. New connective tissue cells, wherever formed, as they become old and organized, *contract*, and it thus happens, that as the disease goes on, many of the intertubular capillaries forming the plexus, become obliterated at points, while in others, they are in all stages of contraction, being choked off by the new tissue formation. It is easy to comprehend, therefore, that the outward current of blood from the glomerule, is very seriously retarded, as it is more readily assailable from its large number of branches than that of the single larger afferent arteriole, coming off as it does directly from the trunk of the interlobular artery. We thus perceive, that the blood is dammed back upon the glomerular tuft, which raises the ten-

sion especially high within these vessels. That this is no mere theory, has been proven by Dr. Dickinson, who found, upon experiment, that the granular kidney permitted much less water to pass through its vessels under pressure, than the normal organ.

It is likely that still another factor operates in the case of renal cirrhosis, to increase the intra-vascular pressure, within the glomerule, namely, the thickened capsule of Bowman.

Thus we have in the advanced stage of renal cirrhosis, both the increased force of an extra powerful contraction of the heart, on the one side, of the glomerule, and counter to this, an impeded current on the other, exerting a backward force, owing to obstructed capillaries, and these two forces meet in the glomerular tuft of vessels, and thus we have all the conditions requisite for producing transudation of albumen as well as the secretion of a copious amount of urine, of low specific gravity, all of which are the accompaniments of advanced granular kidneys, *but not till the disease is advanced.*

Having shown that albuminuria can never be relied upon as an early symptom of chronic Bright's disease, and given at length the physiological and pathological reasons therefor, as well as referring to a large collection of clinical and autopsical proofs thereof, and moreover having traced it to its philosophical and pathological cause, when it does occur; it now remains to ascertain, what are the symptoms which, taken individually and collectively, may be relied upon to establish an earlier diagnosis of the disease.

So large a proportion of the profession has become wedded to the old teachings, that albuminuria forms the hinge upon which the door to renal disease has ever been opened, that I apprehend it will be easier to explain facts, with philosophical reasoning, than it will be to do away with preconceived ideas,

or break down old traditions. I am unwilling to believe, however, that a disease so widely influencing in its pathological results, undermining as it does so many of the vital processes of the economy, can approach so silently through years of development, without leaving behind some imprints, which if properly interpreted must reveal its footsteps.

First, then, let us glance at some of its more important etiological factors, for to know disease best is to first know its cause. It has been frequently pointed out that renal cirrhosis occurs most often in people who have lived very generously, partaking of highly seasoned and flavored meat diet; in short, they have been over indulgent in the pleasures of the table. It is the function of the kidneys to eliminate from the system nitrogenous waste, whether this be from the tissues or the food, or from both. We have here then a very direct cause of increased work thrown upon the kidneys, and the result is that extra activity of renal function is called for.

Notice next, that renal cirrhosis is most often developed after middle age. Statistics show that the largest number of cases occur between forty-one and fifty years of age, and the next largest between fifty-one and sixty. Thus, as a rule, it is a disease of middle and advancing life. Why is this? To my mind, Fothergill best answered this question, when he said: "The diseases incident to advancing age are those which arise through inability of the system to get rid of its waste products." Here then we have two powerful determining causes of disease, whose especial foci is the kidney: a demand for increased functional activity, and a diminished functional power.

Gout, rheumatism, free use of alcohol, and the absorption of lead into the system, as well as some other factors may, and doubtless do, act as accelerating or predisposing causes; but to

my mind, around the two conditions, advancing age and ingestion of foods which leave behind the maximum of nitrogenous waste, clusters most of the phenomena of the disease, in its causative relations, and the more closely this is kept in mind, the more readily will be understood what I shall have to say of the symptoms which accompany it.

Heidenhain has shown conclusively by his beautiful experiments with indigo injections into the circulation, that the solid elements of the urine are excreted by the epithelium of the convoluted tubules. We have through heavily charged nitrogenous foods, a very material increase of work thrown primarily upon the epithelial cells of the convoluted tubules, and at a time when the functional power of such cells are on the wane, from advancing age. The cells, thus both over-taxed and crippled, become in time functionally impaired, and are unable to meet the demands made upon them. We have previously shown that necrosis of the cells does not result directly, but the impaired function is made known through the retention of those products in the system which it was their province to eliminate, and which, thus accumulating in the system, result in certain derangements and symptoms which we shall next consider.

THE CUTANEOUS SYSTEM.

One of the earliest manifestations of chronic Bright's disease is pallor of the skin. It is pretty uniformly present in quite early stages of the disease. In some well nourished individuals, it is true, the disease does not make sufficient impress upon the blood to cause this loss of color in the skin till well advanced; but taking the average of cases, as we find them, it may be laid down as the rule that a suspicious pallor and unhealthy color of the skin is present, and we may often note this condition before albumen is discoverable in the urine. The

peculiar pallor referred to is not the pronounced anæmic whiteness exactly which we meet with in acute Bright's disease, on the one hand, nor yet the semi-bronze-like hue, due to malignant cachexia, but it is rather an intermediate tint. Dickinson says: "It is somewhat of the *pallor luteus* somewhat anæmic appearance, though a sort of sun-burnt tinge upon the skin prevents the whiteness characteristic of the acute form, a dirty, faded hue."

Defective perspiration is also a common accompaniment of early cirrhotic disease, and this results in a dry, harsh state of the skin. This is probably due to two causes: compensatory elimination through renal incompetency, and perhaps later on to hypertrophy of the muscular walls of the small arteries of the skin, interfering with the nutrition of the latter.

Other cutaneous symptoms may arise, as erythema, or acne rosacea, but these are more likely to occur later in the disease.

THE MUSCULAR SYSTEM.

One of the earliest noticeable accompaniments of chronic Bright's disease, is usually diminished muscular power. The patient experiences an unaccountable disinclination for muscular exertion, and is easily tired. He walks less, and rides more frequently than is his usual custom, when he finds it necessary to go about. A weary feeling is experienced in the muscles, and he perhaps goes to some watering place to seek rest from business, which latter, he imagines has over-taxed his strength, but he returns unimproved.

More or less emaciation is likely also to be present, though this latter does not always obtain, and, in some cases, it is conspicuously the opposite.

THE DIGESTIVE SYSTEM.

It is well known that all forms of Bright's disease are accompanied more or less by dyspeptic symptoms, at some stage of

their progress. In the form under consideration, however, dyspepsia has been noted as one of its very earliest symptoms. Dr. Geo. Johnson has observed a flatulent dyspepsia, with nausea and occasional irregularity of the bowels, to precede renal cirrhosis so frequently, that he even regards it as one of the causes of the disease. He thinks the kidneys become deranged in such cases, in consequence of their long-continued elimination of the products of faulty digestion. Be this as it may, the fact is notorious, that flatulent dyspepsia *precedes*, for a longer or shorter time, in a large number of these cases. In two cases which came under my own care, it was the first symptom which led both patients to seek medical advice, and for that which they both supposed to be simple disorders of the stomach. In one of these cases, no albumen could be found in the urine till over a year after the first dyspeptic discomforts appeared, and the latter continued, off and on, till albumen finally was discovered in the urine in small traces.* In the second case, albumen was found in the urine on first consultation, but it has been occasionally absent in the course of the disease since. Loss of appetite is an early and persistent characteristic of the disease. Nausea frequently accompanies the dyspepsia of renal cirrhosis, and when it does, it is most frequently complained of in the morning, before food is taken. Irregularity of the bowels completes the round of digestive disturbances which are the outgrowth of this disease. Constipation being the most frequent departure, and I have noted this early in those cases in which heretofore the patient had congratulated himself on most scrupulous regularity, throughout his preceding life.

THE RESPIRATORY SYSTEM.

Dyspnœa is a frequent symptom of renal cirrhosis. It may

* Subsequent autopsy revealed granular kidneys.

exist in various forms, and it may be one of the first symptoms which attracts attention, or, it may not appear till ushering in œdema of the lungs, which closes the life of the patient. In the latter case, probably only in advanced stages of the disease. We may have dyspnœa coming on quite early in the disease, simulating asthma in many respects, especially in its more frequent prevalence at night. Some look upon it as an eliminative effort of the lungs. Others regard it as of cardiac origin, or at least due to cardiac disturbance. Bartels and Dickinson seem to regard the attacks as uremic, Rosenstein denies this, and Johnson speaks of them as nervous dyspnœa, of uremic origin. Whatever may be its cause, it simulates asthma closely, coming on suddenly, usually at night, accompanied by sibilant râles, and followed by more or less watery expectoration.

I am aware that many authors regard this dyspnœa as a symptom only accompanying the advanced stages of the disease. But that it may occur comparatively early in the disease, I am equally positive, as the following case has shown me. A case came under my observation in which the patient complained of dyspepsia, and attacks of short breathing, coming on at night. High vascular pressure, and other symptoms pointed to granular kidneys. The dyspnœa became much worse after a few days, indeed, in one of the spasms which I witnessed, I never saw more distress or anxiety depicted in the countenance of a truly asthmatic patient. Under diaphoretics and purgatives, these symptoms subsided, and the patient had no recurrence of them. Eight months afterwards he succumbed from outside causes, and the autopsy revealed granular kidneys by no means advanced, each organ weighing slightly more than five ounces. In another instance, three years since, that of a well-informed physician, who served in his professional

capacity through the late war. He had noticed some declining health, but the first symptoms which aroused his attention, was an asthmatic attack at night, followed by others, which led to to the discovery of renal cirrhosis from which he subsequently died. It may be said, that there is no proof in the last case that the disease was not advanced, and while this is true, yet it was the first symptom which aroused any suspicions, and if no symptoms are observable till dyspnœa overtakes the case of a medical man, how much more likely is it to be the case with our patients?

That the mucous membranes are especially prone to irritation in the early stage of renal cirrhosis, we have already seen in the case of the digestive tract. It is equally so with the respiratory tract. Bronchial catarrh has been frequently noted by various authors as preceding or accompanying the granular kidney. The late Dr. Mahomed regarded this as one of the early results of high vascular pressure, which, in some instances led on to pneumonia, in people of advanced age, before they were overtaken by the renal disease. Pharyngeal or naso-pharyngeal catarrh, is another evidence of disturbance of the respiratory tract, which may often be observed in early cirrhosis; and, lastly, I would mention, the frequent occurrence of emphysema of the lungs in these cases.

THE VASCULAR SYSTEM.

Of all the disturbances which arise in the course of chronic Bright's disease, those of the vascular system are among the *earliest, most constant,* and give us, when properly interpreted, the most important information. If the theory which we have advanced as to the etiology of the disease, and supported thus far by pathological evidence, be correct, then the first consequence which results from the disease, outside of the kidneys themselves, must fall upon the vascular system. And it will

be found on following its pathology a step further, that the deduction will be confirmed.

Dr. George Johnson pointed out* certain interesting and constant anatomical changes, which occur in the minute arteries in cases of granular degeneration of the kidneys, consisting of thickening, and hypertrophied growth of their muscular walls. He showed that both the circular and longitudinal muscular layers of the small arteries constantly participated in this hypertrophic development, but that the veins do not share in this change. Dr. Johnson regards this change in the walls of the small vessels as due to the resistance offered in the capillaries to the circulation of abnormal blood. He says: "The minute arteries, by their contractile power, under the influence of vaso-motor nerves, now regulate the blood supply in accordance with the diminished requirements of the glands. This regulating contraction continues and increases, month after month, year after year, and the physiological result of this persistent over-action of the minute arteries is that their muscular walls become hypertrophied." He refers the hypertrophy of the left ventricle of the heart (so constantly accompanying this disease) to a similar cause, for he adds: "The minute arteries throughout the body (of course under the influence of vaso-motor nerves) resist the passage of this abnormal blood, and in consequence the left ventricle beats with increased force to carry on the circulation. The result of this antagonism of forces is, that the muscular walls of the arteries, and those of the left ventricle of the heart become simultaneously hypertrophied."

Gull and Sutton, later on, claimed, 1st, "That there is a diseased state of the arterioles and capillaries in this disease, characterized by increased growth in the outer fibroid coat, or

*Medico-Chirurgical Transactions, Vol. xxxiii.

tunica adventitia, which they termed *arterio-capillary fibrosis.*"

2d. "That this change in the arterioles and capillaries is the primary and essential condition of the morbid state called chronic Bright's diseases with contracted kidney."

3d. "That the morbid state under discussion is allied with the conditions of old age, and its area may be said hypothetically to correspond to the *area vasculosa.*"

4th. "That it is possible that this change commonly begins in the kidney, but that there is evidence of its beginning primarily in other organs, and finally, that the contraction and atrophy of the kidneys are but a part and parcel of the general morbid change."

In the light of subsequent investigation, the only one of these propositions of Gull and Sutton which remains tenable is the existence of fibroid change in the small vessels, *not to the exclusion of*, but in addition to, the muscular hypertrophy.

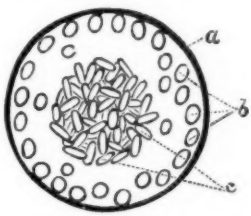
That the cardio-vascular changes are dependent directly upon renal deficiency, is shown, 1st, by their constantly accompanying all forms, even scarlatinal, of that deficiency, if only it continues long enough, or the patient survives a sufficient length of time; and this becomes another proof, that in cirrhotic kidney the functional incapacity of the organ may long exist before it is made known by very active general symptoms.

2d. That the occasional existence of the disease in children, in which cases all the typical cardio-vascular changes accompany it, completely disproves the second, third and fourth propositions of Gull and Sutton, and moreover, furnishes the very strongest evidence that the cardio-vascular changes are subject to the renal disease, as their primary, unvarying, and constant cause.

Professor Hamilton, of Aberdeen,* has formulated the laws,

* "On the Circulation of the Blood Corpuscles Considered from a Physical Basis."—Journal of Physiology, Vol. v., No. 2.

which govern the circulation of the blood corpuscles in the vessels, in the most lucid manner, and demonstrated their correctness by means of a series of interesting illustrations. These consist in passing a current of water, containing bodies of varying sizes, shapes, and specific gravity, through glass tubes, which thus imitate the systemic circulation. He first calls attention to the fact, that the blood current consists of an axial and peripheral stream, and that "the colored corpuscles float exclusively in the axial stream, while a great many, not all, of the leucocytes run in the peripheral."



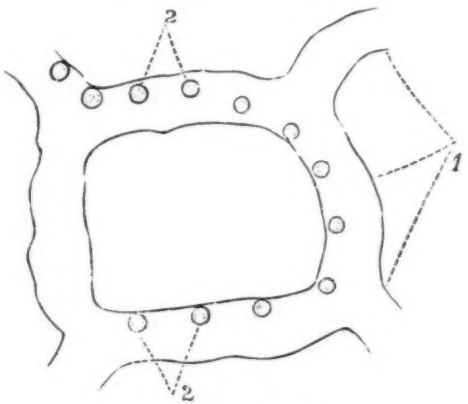
a Vessel wall.

b White corpuscles in peripheral stream.

c Red corpuscles in axial current.

He demonstrates clearly the following among other laws by practical experimentation:

1st. "That if a sphere is specifically lighter than the liquid



1 Web of frog's foot

2 White blood corpuscles.

After Hamilton.

in which it is suspended, it will sooner or later come to occupy the upper strata, and will rotate."

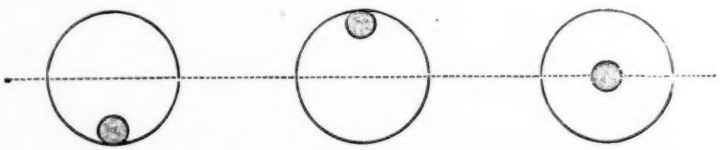
Now this is precisely what the colorless corpuscles do in normal conditions of the blood, as may be demonstrated by observing the circulation in the frog's foot, viewed horizontally by means of the microscope. The white corpuscles will be seen to roll along the upper surface of the vessels, because they are lighter than the blood plasma in which they move.

2d. "That a disc or sphere of the same specific gravity as the liquid in which it is immersed, moves in the axial stream, and *does not rotate.*"

This explains why the red corpuscles, as they are of the same specific gravity as that of the blood serum, occupy the axial stream of the vessels, and do not rotate as do the colorless ones, but *glide.*

3d. "Spheres, or discs, whose specific gravity is greater than the fluid in which they circulate, move in the lowest strata of the tubes, and *roll*, or rotate."

Thus it will be noted, that bodies which depart from the specific gravity of the fluid in which they circulate, occupy the peripheral stream and rotate as they move; while those which do not depart materially from the specific gravity of the circulating fluid, move in the axial stream, and do not rotate, but glide.



Other laws are formulated and illustrated in the same paper bearing on the size, weight, and rapidity of motion, as the bodies occupy the axial, or peripheral stream, and the fact is noted, that the colorless corpuscles evince a tendency to

stagnate, or clog in places, especially at the curves of the tubes. I have gone over these experiments with Professor Hamilton in his laboratory, and I know that the laws which he formulates do not rest on any mere theoretical basis, but are amply borne out by his interesting and instructive demonstrations. Professor Hamilton thus sums up this matter: "The cause of a colorless corpuscle blocking the tube undoubtedly is, that its light specific gravity tends to press it upwards against the wall of the vessel, to which it may become temporarily adherent. From this we may learn an important lesson, namely, that if the colored corpuscles were not so balanced as to closely approach the specific gravity of the plasma, the circulation would become a physical impossibility; for if they were specifically lighter or heavier than the plasma to a marked degree, there would be a constant tendency for them to obstruct the capillaries and to hinder the onward flow. The essence of the blood circulation is that the large majority of the corpuscles never touch the wall of the vessel, but glide in the central stream. Were the colored corpuscles to rub against the wall of the vessel, the friction would be so enormous over the whole capillary system that the heart, as at present constituted, would be wholly inadequate to drive the blood onwards. Indeed, my own impression is that if the blood corpuscles all differed materially from the specific gravity of the plasma, the circulation could not be carried on even with a much more powerful heart."

Now, what is the actual condition of the blood in cases of granular degeneration of the kidneys? From the various sources from which I have been able to get statistics, I have estimated, roughly, that the blood is about ten per cent. more hydremic in cases of renal cirrhosis, than in the normal condition. It must not be forgotten, that other circumstances in-

fluence the deviation from the normal, in this disease, but all observers agree that it is somewhat lighter than in health. My own calculation from the few tables I have been able to find, places the average specific gravity of the blood serum in renal cirrhosis at 1025.5. These estimates, in the light of Professor Hamilton's researches, teach us, to say the least, a very probable explanation of that interesting and important series of cardio-vascular changes, which so uniformly accompany the granular kidney.

Not only may the loss of balance between the plasma and corpuscles call for more muscular development in the fibres of the heart, resulting in hypertrophy of the ventricle, but if also, as Professor Hamilton points out, even a part of the red corpuscles of the blood are forced into the peripheral stream, they may by their friction against the vessel walls be the source of an irritation, which gives rise to the degenerative changes therein.

It has occurred to me that Professor Hamilton's laws may explain a phenomenon which is often present in renal cirrhosis, and which, heretofore, I have never been able to explain satisfactorily to myself. I refer to the singular circumstance that in such cases the patients often pass much larger quantities of urine at night than in the day time. It now seems plain enough to me, that if the blood plasma is reduced in density, when the patient assumes the recumbent position more of the red corpuscles gravitate into the peripheral stream, and the extra friction induced thereby, calls for more force of the heart, and thus the intra-vascular pressure becomes high, and this latter we know always increases the quantity of urine.

We may not as yet be able to comprehend all the causative relations of these vascular changes, but we are very certain of one fact, namely, that increased intra-vascular pressure and

high tension of the vessel walls are the most constant of all the early symptoms of this disease. As indications of these conditions, I would call attention to the character of the pulse, which is hard, unyielding, and rolls under the finger like a cord. The pulse is notably prominent under the finger in chronic Bright's disease. But high pressure of the vessels is estimated much more accurately by means of the sphygmograph, and hence this instrument has proven of the greatest value in pointing out the true condition of the circulatory apparatus in chronic Bright's disease.

Fig. 5.

Fig. 5 is the pulse tracing of a healthy man, under three ounce pressure, and may be fairly said to represent the usual pulse tracing by the sphygmograph, in perfectly healthy conditions of the heart and vessels.

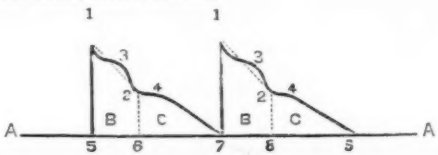


Fig. 6.

Dr. Mahomed estimated high tension as follows: First. "A line must be drawn from the apex of the up stroke, 1, Fig. 6, to the bottom of the aortic notch, 2. No part of the tracing should rise above this line; if it does, then the pulse is one of high pressure." Second. "The height of this notch is another good gauge of pressure, the higher it is from the respiratory line AA, the higher is the pressure; the nearer it approaches the respiratory line AA, the lower is the pressure." The

length of the systole of the heart, 5 to 6, Fig. 6, compared with that of the diastole, 6 to 7, is also considered a gauge of high pressure. In normal tracing the length of the systole, as marked on the respiratory line, AA, Fig. 6, should be about half as long as that of the diastole. In conditions of high pressure, the systole is lengthened, in some cases exceeding the length of the diastole.

I think it is unfortunate that the terms high tension and high pressure have been so much confounded with each other by nearly all authors.

I consider a pulse of high tension one in which the vascular walls are rigid and inelastic from organic change. It may or may not include high vascular pressure. The term high pressure I define as increased intra-vascular force, coming from increased power of the heart, or resistance in the capillaries.

Dr. Byrom Bramwell* says: "I am in the habit of considering a pulse of *high tension* as synonymous with a *strong pulse* and *vice versa*, a pulse of low *tension*, with a weak pulse."

Now, the above does not by any means follow, as I will illustrate. Fig. 7 shows the pulse-tracing of a patient of mine, taken March 8th, whose case I had diagnosticated eight months previously as cirrhosis of the kidneys.

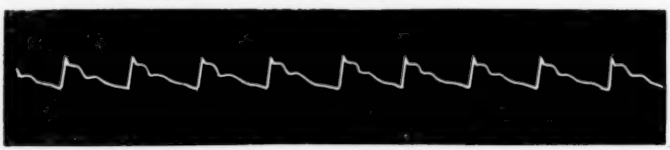


Fig. 7. 4 oz. pressure.

It will be observed that this tracing shows in a marked manner the characteristics of high tension. The tidal wave is sustained above an imaginary line from apex of percussion stroke to

*"Students' Guide to the Examination of the Pulse and use of the Sphygmograph, 1883."

the bottom of the aortic notch. About two days after this tracing was taken, March 11, the patient was suddenly seized with gastric hemorrhage, losing a large amount of blood (over a pint) the first twenty-four hours. The hemorrhage continued interruptedly, sometimes ceasing for a day or so, till March 26, when he died, at 3 A. M., from direct loss of blood.

The autopsy revealed granular kidneys, though not advanced to contraction, atheromatous arteries everywhere, including that of the aorta. No appreciable hypertrophy of heart. Behind pylorus of stomach a scirrhous mass, which latter doubtless was the cause of the hemorrhage.

Now, no one will pretend to claim that high intra-vascular pressure could be present after the first great loss of blood, much less as the hemorrhage progressed day after day, till the patient died from anæmic exhaustion, yet it will be noted throughout that the tracing maintained the usual characters of high tension, even when the characteristics of high pressure were abolished and the pulse became somewhat dicrotic. Nor

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

were the indications of tension lost till the pulse became even hypodicrotic, as shown by the tracing of Fig. 11, taken a few hours before death.

This case has shown me that we may have tension or rigidity of the vessel walls, with very ordinary, or indeed low intravascular pressure. High tension, then, is due to rigidity of the vessel walls, from atheroma, or allied conditions, and it is presumptive evidence of chronic Bright's disease. I may state that I have never failed to find the characters of high tension in the tracing of a patient's pulse in renal cirrhosis, no matter how early the form. It is not positive evidence of chronic Bright's disease, because we have atheroma aside from Bright's disease sometimes, and if we can separate the causes, it will give us pretty positive evidence.

High pressure includes high tension, and is due to powerful and prolonged contraction of left ventricle of the heart, frequently with hypertrophy of the latter, and as such is almost pathognomonic of chronic Bright's disease.

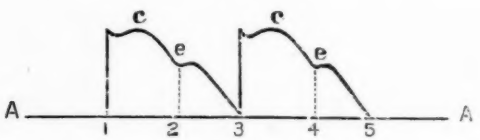


Fig. 12.

Fig. 12 shows the characters of the tracing of high pressure. The prolonged systole, 1 to 2, and 3 to 4, as compared with the diastole 2, 3, and 4, 5. It shows also the high and sustained tidal wave c. c., and the aortic notch e. e., high and well away

from the respiratory or base line A. A. For comparison with characters of tracing in simple high tension, see fig. 6.

The late Dr. F. A. Mahomed collected the records of sixty-one patients, treated in Guy's Hospital during the years 1879 and 1880, for chronic Bright's disease. They possessed the following characters: "*They all had the signs of high arterial pressure.* They all had very considerable hypertrophy of the heart. *In all cases the urine was free from albumen at some time while under observation.* In eleven cases albumen was present on one or two rare occasions during a long period of observation. In three cases, though absent during long periods of observation, it occurred just previous to death; in three other typical cases of Bright's disease, the patients were admitted with albuminuria, which disappeared under treatment, and they left without it. Three cases had urine very variable in its character, sometimes albuminous, sometimes not. In the remaining forty-one cases, *albumen was never discovered in the urine.*" It may be added that in *all* these cases daily observations were made. The quantity, specific gravity, solids, and albumen present in the urine, were appended.

It is the rule, then, that high arterial pressure invariably accompanies chronic Bright's disease, and that it precedes the albuminuria.

Dr. Mahomed found high pressure to precede the disease so invariably, and in some cases so long, that he was led to believe that it was the *cause* of chronic Bright's disease, at least in some cases. I cannot believe that this view is in keeping with the clinical history or pathology of the disease, and moreover, if it were correct, bleeding and purgatives should arrest the disease.

Epistaxis of an obstinate character is another symptom of chronic Bright's disease to be ranged under those pertaining to

the vascular system. It also is due to degenerated vessels, and high arterial pressure, which accounts for its obstinacy. In some of my cases, inquiry into their history has revealed the occurrence of an obstinate attack of bleeding from the nose very early, and I attach considerable importance to such occurrences. Epistaxis, due to renal causes, may sometimes occur, as far back as two or three years, or more, before any appreciable symptoms of the disease are manifest. Vertigo is also one of the early symptoms which is well to note the import of. It may be so pronounced that the patient may fall in walking, as was the case with one of my patients more than once before its cause was made out. Tortuous arteries, as the radial and temporal, quite uniformly accompany renal cirrhosis and are manifest quite early. I have noted small aneurisms of superficial arteries, particularly in the wrist and neck, as sometimes present. I have not seen this noted in the literature of this disease, but it has occurred in my cases often enough to call my attention to it as a sign. The *superficialis volæ*, in the wrist, and small branches of the external carotid are the most usual seat of these small aneurismal sacs, according to my observations.

THE NERVOUS SYSTEM.

Valuable as are the symptoms referable to the vascular system in an early diagnostic point of view, those of the nervous system are scarcely less so. Among the most important of these are retinal changes and visual disturbances.

Retinal changes are often the first symptom leading to discovery of the disease. Bartels says: "Very often some disorder of vision, provoked by the specific structural change that has taken place in the retina, forms the first event that attracts the patients own attention. No small number of my patients first went, on account of their eyes, to my colleague Voelckers, and were first induced by him to place themselves under med-

ical treatment, which they were not aware they needed." The frequency of these retinal changes in the course of renal cirrhosis are such as to constitute them important occurrences to note. Eale's* statistics, founded on observations of the *fundus* in one hundred cases of granular kidneys, show the presence of retinal change in twenty-eight, or one in three and a half.

Gowers says: "The retinal disease presents certain elements which are variously combined in different cases. These are (1), diffuse slight opacity and swelling of the retina, due to œdema of its substance; (2) white spots and patches of various sizes and distribution (fan shaped), due for the most part to degenerate processes; (3) hemorrhages; (4) inflammation of the intra-ocular end of the optic nerve; (5) the subsidence of inflammatory changes may be attended with signs of atrophy of the retina and nerve."

The degenerative is the most frequent form, beginning in small white spots, which spread out in fan shape near the *macula lutea.* This leads to impairment, *not complete loss,* of vision, and comes on slowly, and is rarely, if ever, completely recovered from, though improvement is common. The hemorrhagic form comes on very suddenly, as a rule, and often results in total blindness. It may be recovered from completely, or induce inflammatory changes.

Gowers has made the important observation† that in many cases of chronic Bright's disease, there is to be seen a notable diminution in the size of the retinal arteries, *independently of the existence of any special retinal disease.* He says: "The veins are in such cases not larger than the normal, but the arteries are *not more than one-half, or even one-third, the diameter of the veins,* instead of being two-thirds, or three-quarters

*Birmingham Med. Review, January, 1880.

†British Medical Journal, Dec. 9th, 1876.

the diameter. The comparison must be made between arteries and veins which run side by side, and correspond in distribution." I regard the above discovery as only second in importance to the indications afforded by the sphygmograph in cases of chronic Bright's disease.

Other symptoms of nervous disorder are more or less frequently present in early cirrhosis. Neuralgia is perhaps the most common. It is most often occipital, but may be temporal or vertical. In patients, without previous history of neuralgia or assignable cause, it is important to note such symptoms. Insomnia is frequent, and marked in a large number of cases.

THE URINARY SYSTEM.

Often the first symptom that the patients notice is that they get up at night to urinate. This, as I have previously noted, is because more urine is secreted at night than during the daytime. Usually before the urine contains albumen, if observed it will be found of high specific gravity, say from 1.020 to 1.035. And here I would insist, that the specific gravity of any single specimen of urine, unless it be a part of the whole twenty-four hours' quantity, is entirely valueless from a diagnostic point of view. The urine must be saved during the whole twenty-four hours, and the specific gravity compared with both the normal gravity and quantity. If found constantly much over 1.020, the fact becomes important. The urine throws down, as a rule, numerous envelope-shaped crystals of calcium oxalate, and also uric acid crystals; in fact, the urine is often loaded with urates in these cases. Lastly, the urine may give the blue color reaction with peroxide of hydrogen solution and tincture of guaicum, showing the presence of blood crystalloids. This latter is important when present, but it is not so constant as the others. Such, in the main, are the symptoms most likely to be met with in the pre-albuminuric stage of chronic Bright's

disease. Our diagnosis is rather to be sought through their collective than individual study, for it is only upon a thorough comprehension of all the phenomena surrounding the morbific changes of this disease, that it becomes possible to penetrate its varied symptomatology during its incipiency.

All life, and growth is influenced, not only by the soil or pabulum which sustains and nourishes it, but also, by the inherent qualities of the seed or germ from which it sprang; so with disease and decay, not only are they maintained by the lesion of the individual organ, but also influenced by inherent inherited qualities; they follow no stereotyped laws of symptomatology in all cases, but the first manifestations become apparent in this location in one case, and in the next location in another, as one or the other part of the organism is inherently weak, or has been unduly taxed. Chronic Bright's disease is no exception. In one class of patients, the results of impaired renal function will first fall upon the circulatory system, while in another, it may be on the nervous, the respiratory, the digestive, or the urinary system itself. Our diagnostic conclusions should hence be drawn, not alone from the local symptoms, as perhaps has been too much the custom, for if we wait for marked evidences of impairment here, the disease will often escape detection till the anatomical changes become so far advanced that the disease will be practically beyond the reach of medication. The textural changes, from their very nature, are such, that when once thoroughly engrafted upon the organ, their removal is not within the compass of the present state of medical science, and hence our only hope of arresting this disease, must rest on its discovery during the functional stage. If, fortunately, I shall have contributed in any way to the elucidation of the latter question, the object of this paper will have been accomplished.

163 State Street.

ARTICLE II.

A CASE MOLLITIES OSSIUM. *By* W. J. WEBB, M. D., *of Chicago.*

[Read before the Chicago Medical Society, March 2nd, 1885.]

The etiology and pathology of this disease is very obscure and its clinical history meager and contradictory. So far, the most positive information we have upon the affection has come to us from Europe, the valleys of the Rhine and Po seeming to furnish the most examples. Yet the knowledge thus obtained is so varied, and the reports so contradictory, that it is far from being conclusive or satisfactory. That it often bears some relation to the pregnant state, though, is probable. Debossati, of Milan, claims to have treated no less than sixty-two cases, for deformities of the pelvis, caused by malacosteon, during a period of eighteen years. They were all women who came from districts where pellagra and typhus were most prevalent. This statement is strengthened by the collection of the records of one hundred and forty-five cases by Mr. Durham, who says that of this number one hundred and thirty-two were women, and that ninety-one of them were attacked during pregnancy or shortly after childbirth, and that the majority of them were between twenty-five and thirty-five years of age. This corresponds somewhat also with two cases reported by Dr. Bush in the *London Practitioner*, 1883. As has just been intimated, the social habits and character of the food may play an important part in the predisposing causes. The sixty-two cases referred to by Debosati came from wretched villages, where their food consisted mostly of maize or rice, and that often musty. The rooms in which they worked were filthy and badly ventilated. These unfortunate surroundings and circumstances, added to the character of the water, and the meager subsistence with which they eke out an existence,

Debossati supposes to be largely concerned in the production of the disease.

Agnew says that rickets, struma syphilis, miasmatic emmenations, rheumatism, dampness and food deficient in certain universal substances have all been invoked in explanation of the morbid change. In some few instances, as in one given by Dr. Omerod (in the *Medical Record*, in Sept., '57), the disease seems to be hereditary. Mental disease, aliment poor in saline constituents of bone, have also been mentioned as exercising a determining influence. The testimony in reference to the condition of the renal secretion in this malady, while it has brought us a step nearer in our investigation, has been so limited and contradictory, that nothing very satisfactory has been obtained from this source. That this secretion has usually presented marked alterations in quality and appearance, is generally, I think, admitted; yet there are some few cases, we are told, in which no apparent deviation whatever from the healthy constitution of the urine is observed during the course of the disease. The older writers described to us a copious deposit of a white, chalky-like substance that was found upon evaporation or cooling; this, later and more thorough investigations have shown to consist mainly of phosphate of lime. Now, while this discovery would at first thought seem to furnish us a key to the solution of this abnormal metamorphosis, I think that upon more deliberate consideration it will be seen that we are nearly as far from the real cause as we were before the revelation was made. Being convinced that these lime salts have been removed from their proper relations in the bones and then finding them in their disintegrated state on the glass slide or in the test tube, only convinces us that they have been eliminated and indicates to us the means by which it was done, but it does not in any way intimate to us with any degree of

certainty the cause or causes that were instrumental in originating and perpetuating this destructive process. Some pathologists tell us that the earthy matter in the hyaline matrix is first dissolved, thus reducing the compact bony structure to a condition akin to the original cartilage; that as the disease advances this substance is disorganized or dissolved, and these heterogeneous masses that have been variously described as fatty, jelly-like products, are the result of these changes. The venerable John Hunter considered these changes simply a fatty degeneration and Paget seems to give credit to the same opinion, saying that the pink color of the medullary substance is due to the bright tints of a part of the oil globules and of the nuclei and granules in the bright-colored fat cells; and that there was no appearance of an excess of blood in the bone or any part of its contents. Holmes says, quoting from the *Medico-Chirur. Transactions*, that the diseased tissues consisted simply of an organic matrix, with a little earthy matter, and containing a little fat; hence it is impossible to describe the disease as simply fatty degeneration. But the authorities who have had most to say upon the pathology of the disease, and whose professional standing and scientific research render their opinions worthy of our careful consideration, are Virchow and Rindfleisch. And still they do not agree; Virchow claiming that the first stages of the abnormal vital processes are essentially that of hyperæmia, and that the medullary substance is reduced to a condition identical with the fœtal marrow, and that it is caused by the presence of lactic acid in the parts, while Rindfleisch says the condition is not one of congestion or hyperæmia, but an extravasation of blood in the part, and that the medullary substance resembles more nearly the tissue of normal spleen, and that the disintegration is caused by the presence of carbonic acid in the parts.

McNamara says: "We can, however, form only an imperfect notion of the pathology of the disease until we examine sections through the extremities of the bones which are still comparatively healthy; here we find the articular cartilages in places unaffected, the ossification is progressing in a very perfect and orderly manner, but the cancellated tissue a short distance from the cartilage is filled with round cells; in other places composed of a fine fibro-cellular material similar to that of cartilage when it has undergone fibroid degeneration and broken down into a cavity or ulcer. In some sections we see the cells of the articular cartilages undergoing very peculiar changes, each of the original cells breaking up into a nest of cells, which individually resemble the blood globules of a fœtus. In fact, it seems as though the early stages of the disease existing in these specimens are nearly related to the condition noticed in cases of lympho-sarcoma: the cells of the medulla, from some obscure cause which we do not understand, have failed to perform their functions, their tendency under the circumstances being to revert to their cartilaginous prototype, as though there were something defective in the living matter of the blood. Presuming that the sound cells of the medulla are organisms, the outcome of the cartilage and blood cells in the disease, we are considering, the living matters of the blood being defective, the inherited tendency of the cartilage cells predominate, and so the medulla, in place of building up new bone to replace that which disappears in the course of disintegration, breaks up into a lowly organized fibroid structure and subsequently degenerates into a fatty substance such as that which we see filling the cancellated structure of the bones."

This excellent and ingenious investigator of this subject concludes that the cases of osteomalacia may be divided into three classes:—

First. Those due to carcinomatous or sarcomatous disease of the medulla.

Second. Those due to an affection of the medulla allied to lymphoma.

Third. Those due to some peculiar condition of the medulla or perhaps of the blood, dependent on the state of pregnancy.

This, to my mind, covers the ground as intelligently and completely as anything I have seen; yet it seems to me that there must be a condition of the nutritive fluid not connected with pregnancy that predisposes to these various changes in the medullary cavity. Whether it is lactic acid or carbonic acid, or both, or something else, I am not prepared to say. The variety of forms in which the disease manifests itself and the various pathological conditions that have already been discovered would indicate that it is often complicated and the diseased processes far from being uniform; and I am inclined to the opinion that in the future investigations of the disease the functions of the nervous system will receive more attention than formerly.

As to the cause of the case, I will endeavor to describe to you, I have no well grounded conviction; but since he dates his symptoms back of the specific disease, and since some of the other members of the family have similar symptoms, it seems to me reasonable to infer that in the predisposing causes an hereditary tendency may have existed, and this, together with his youthful vice, coupled with his spermatorrhœa and erotic temperament, may have been sufficient to induce the albuminuria and a consequent cachexia, which served as a fruitful soil for the ravages of the specific disease, which I think he had in 1876.

The following is a clinical history of a case of this disease

which came under my observation last year, with plates illustrating the external appearances of the body and a part of some of the bones. I have to regret that circumstances forbade my obtaining microscopical examinations of the tissues and secretions.

I was called to visit Mr. G. about the 1st of August, 1884. I found him lying upon his back, and barring his somewhat labored breathing, to all external appearances comparatively comfortable, and judging from the looks of his face one would say that he was well nourished; but upon removing the covering from his body I found it presented quite a different aspect. His right arm was bent and broken, as were his femora. The anterior part of the chest wall was directed forwards and upwards, and by placing my hand upon it I could distinctly feel what to the sense of touch reminded one of a counting abacus under the skin, so nodulated were his ribs.

At this visit my attention was directed to the most peculiar effects of the disease I noticed during the time he was under my observation. It consisted in what seemed to be the separation of the left supraorbital ridge. He said it was loose, and taking hold of it I found it was detached from the continuous bony structure, and when it was moved the patient said he could hear a grating noise. It soon afterwards partially united, as did many of the other fractures, and remained so until death. The maxillary bones at that time, as were the teeth, were quite firm and unyielding. The joints were generally slightly enlarged and irregular in outline. His appetite good. Temperature, 97½° F., circulation, 99, with what I considered an aortic heart murmur. Bowels constipated, tongue slightly coated with a light yellow fur, respiration 22. Urine, in twenty-four hours, 136 fl. ozs; acid, reaction; specific gravity, 1,021, with heavy deposit of phosphates; a trace of

albumen, but no sugar. Microscopical examination was not made. The patient seemed to be a little cyanosed and jaundiced, with some spehorrhœa, especially of the scalp and hairy parts of the body, accompanied also with severe itching of various parts at times, which, I think, was due largely to want of proper bathing, I noticed also at this time evidences of specific disease. On the front of the leg there were such characteristic spots and cicatrices as to be unmistakable, as there were also on the arms, shoulders and upper part of the chest. Yet he unequivocally asserted his innocence till the last. His hair was dark and quite normal in appearance; his beard was comparatively thin and confined chiefly to the chin and upper lip. The genital organs were diminutive in size and retracted. On Oct. 6, 1884, I photographed the body,

and noted the following history as given to me by the patient. He was born in Lycoming county, Pa., in 1848, and was brought up as a laborer, being engaged in the woods, sawmills and on the farm. He was of German descent, but his parents were born in this country. His father is living, aged seventy-four

years. Health always poor; suffers from urinary trouble. His mother died at the age of forty-six years—cause unknown. His father's father at sixty years of age, father's mother at nineteen years of age. Mother's father at eighty years of age, mother's mother at fifty-four years of age. Has one brother, aged thirty-one years. Health poor. Has heart and lung disease. Has five sisters, aged as follows: Oldest, forty-five, health not good, has liver difficulty, cannot work much; second, aged forty-three years, health also poor, and is mentally incompetent to perform the duties of life—seems to suffer from melancholia, subjective symptoms much the same as patient's, severe aching in bones. The remaining three aged respectively thirty-nine, thirty-four and thirty, are all living, with rather poor health. About the only vice the patient acknowledged to have indulged in, is that of onanism, which he commenced at the early age of eight years and continued moderately during his youth, but says that he was always very passionate in this particular, so much so that it seemed almost impossible for him to satisfy this appetite after he was married, and that this morbid sensation did not forsake him until a few weeks before I saw him. Said, also, that he often had quite profuse discharges of a milky-looking substance from the penis before or after voiding his urine. This has troubled him at irregular intervals since his youth. At nine years of age he claims to have had a sunstroke, which was probably a convulsion of some kind. Previous to this time he always suffered from indigestion and diarrhœa, during which he passed much undigested food, after which [the sunstroke] he was always constipated. Since his sixteenth year, he has been tired and sleepy, would at times even lie down and go to sleep in the midst of his work; and that heavy lifting always caused pain in his bones. He always had a ravenous appetite, that

was hardly ever satisfied, and drank a great deal of water, coffee and tea, but no alcoholic stimulants. In 1870 or '71, he went to Nevada to work in the woods. There he suffered considerably from catarrh and dryness of the throat. Ate a good deal, and had fits after meals. Remained three months and went to California, where his health seemed to be better, but there his appetite was poor. In 1873 went back to Nevada to work in the mines. There he drank much water that was sweet and it was said contained large quantities of arsenic. At this place he first noticed the eruption on the skin, which he was told was caused by the arsenic. At the same time he had sore throat, and his hair came out. He said, also, that many of the miners suffered as he did, but not so severely. All had more or less of the eruption. After ten months, he was taken away by an uncle, being at the time badly bloated and unable to work. Next day after he was removed he had a severe attack of dysentery, which lasted two weeks, from the effects of which he thinks he never recovered.

In 1875, went back to chopping again, but was obliged to desist, as he could not stand it, having such severe pains in his stomach and bones. Had, also, at this time a very bad taste in his mouth, especially in the morning. Here the eruption was much worse; often it would assume the character of blood boils. During this time he had a tape-worm removed. In 1876, had a severe struggle with a vicious horse, and suddenly felt sharp, shooting pains in various parts of the body; shortly afterwards became very sore all over, had severe deep-seated pains in various places, especially in the arms and thighs. This condition continued with more or less regularity and severity until the summer of 1882, when he gave up work and took to his crutches. In 1877, he was married and has two apparently healthy children, aged two and four years.

His wife appears healthy, but prematurely old. Had another tape-worm removed in 1880. Had his urine examined in 1875 and 1883. In 1875, it was of light specific gravity, and contained albumen. In '83, he passed twelve pounds in twenty-four hours. It also contained albumen. Two weeks before he died, I made a chemical analysis of his urine and found it contained a peculiar albuminoid substance, which would coagulate upon the addition of nitric acid, but would again redissolve by the application of heat. This, I suppose, was the substance described by Dr. Bence Jones and others as the deutoxide of albumen.

During this long history he was treated by many physicians for many diseases, and by those professing as many different faiths. Being once badly salivated, since which time he has not had much to do with the so-called old school doctors. Hence I did not dare mention medicine to him for a long time, but simply allowed him to take his acid phosphates, which he thought was doing him much good. He went to bed finally in January, 1884. Measurement of the body on October 6, 1884: Lower right extremity from symphysis pubis to internal malleolus, 23 inches; to the left internal malleolus, 26 inches; across the femora, just below the great trochanters, 20 inches; right tibia, 16 inches; left, 17½; sternum, 7 inches. The vault of the cranium could be quite easily depressed, and seemed flexible. Total length of body, 52 inches; original length, 68 inches; pulse, normal; respiration 23,—labored; some ascites; appetite good; sleeps well; mind clear and memory good; expresses himself well. October 13, tongue slightly coated, pulse, 102; temperature, 99.10° F.; respiration, 23; appetite good; rests well; mind clear; arms both comparatively useless. After my first visit his right humerus had united sufficiently to enable him to use

it in fanning himself, but soon afterwards the bones in both arms became soft, and the upper extremities entirely useless. Thorax continues to flatten, and the organs of respiration and circulation more embarrassed. October 20, condition much the same. October 30, temperature 97½° F.; pulse 94, quite regular, but weak and soft; breathing more labored, and patient considerably cyanosed. Had a bad spell on the day before, during which he became very black (as he said) and thought he was going to die. Heart's action exaggerated, with the first sound increased while the second is scarcely audible. November 10, unable to move any member of the body except the right hand slightly, and the fingers and toes a little. Lower extremities completely everted, and contained so much fluid that they would pit considerably upon pressure. Temperature 99° F.; pulse, 112; respiration, 24; vomits regularly every day, but appetite good; sleep much disturbed by dreams. November 12, the vital powers seem to be giving away. Pulse, 120; temperature, 99.9° F.; respiration, 25. November 13, much the same. November 20, considerably improved. Pulse, 90; temperature, 97½° F.; respiration less labored and 22 per minute. During the last few days has confined his diet to raw beef steak, which he says agrees with him. He cannot digest anything else as well; even milk causes distress and vomiting. January 7, 1885. Has yet more difficulty in breathing; thinks he is choking to death. Thorax very much flattened and the ribs scarcely perceptible in many places. Complains of considerable pains in upper part of right lung, which is nearly one-third above the clavicle. Temperature not taken; pulse, 115; respiration, 28, and performed with the utmost difficulty; obstinately constipated; some eruption on the face resembling pustular acne, and one small ulcer on the tongue. All the copper-colored spots disappeared from the body several weeks

before. He coughs some and raises considerable viscid mucus. After the last named date he continued to fail gradually with all the former symptoms more or less intensified, until January 19, when he died from exhaustion, caused by pressure upon the vital organs. Post mortem next day in the presence of Drs. Sieber, Porter and Gobs, together with a friend and relative of the patient and one or two others.

POST MORTEM APPEARANCES.—His body was much flattened and diminished in size, so that its general contour resembled much that of a common frog. Yet he was six or seven inches longer than before death, on account of the straightening and stretching of the body in laying it out. He was much emaciated, and the skeleton distorted in various ways. Entire length after the stretching, 4 feet 7 inches. Left femur, 11 inches; right, 11¾; left tibia, 14 inches; right, 13¼; sternum, 6½ inches; left humerus, 11 inches; right, the same; left ulna, 9 inches; right, 10 inches; diaphragm on the right side extends up to the fourth rib. On the left, about 1½ inches lower, but we must not forget the fact that the whole chest wall was directed upwards about two inches, possibly more. Heart in the median line and moderately distended with blood. The pericardium extended up to the second rib, and contains about one ounce of fluid. The structure of the lungs were quite normal in appearance, except the upper lobe of the right, which was bound down by recent pleuritic adhesion. In position, however they were much crowded upwards, a considerable of which was found above the clavicle. The liver was somewhat smaller than normal and slightly congested. The vena cava and pulmonary veins were filled with blood. The spleen and pancreas about half the normal size, very pale, and the tissue tougher than usual. The kidneys were slightly enlarged, irregular in outline, modulated, the capule thickened, the pyramids en-

larged and the tubules partially filled with what seemed to be a calcarious deposit.

The pelvis of the kidney contained more fat than common. The bladder was moderately distended and about filled the pelvis. The peritoneum as well as the intestines and stomach presented an unusually pale and yellowish color. The bowels contained nothing but some hardened feces in the descending colon. The mesenteric glands were enlarged. The brain and spinal cord were not exposed; the head, however, was much smaller than formerly, as the hat he wore was much too large for him, the circumference of the hat on the inside being one and one-fourth inches more than that of the head. The osseous system was all in an abnormal condition; the vault of the cranium being as easily depressed as a moderately distended foot-ball, and nearly as flexible. The bones of the face, though, suffered least, which fact corresponds with most or all other reported cases, yet these were lacking in stability, as was evinced by their being tender to the touch before death, and the looseness of the teeth. The enamel of the teeth was unaffected by the disease. The clavicles were enlarged, elongated and much curved upwards and forwards, caused, no doubt, by the movements and direction given to them in the process of respiration. The thorax, as I have said, resembled that of a common frog more than that of a man. The sternum was not so much affected as most of the other bones, owing, I think, to its close proximity to the cartilages of the ribs, but it was not in its proper shape or position, the manubrium, together with the

sternal ends of the clavicles extended upwards and forwards

while the gladiolus pointed upwards and slightly backwards, making a decided curve posteriorly in that bone. In the anterior third of the shaft of the ribs nearly, or quite all, the proper bone structure was wanting, and the periosteum bent or folded upon itself, the anterior part riding back over the posterior, while the whole anterior aspect of the thorax was directed backwards and upwards, causing the so-called frog-shaped chest. This condition caused so much pressure upon the organs within that the breathing was largely diaphragmatic during the time I knew the patient, and the efforts in respiration were so exaggerated that certain of the laity who saw him called him the bellows. The spinal column, while its natural curves were increased, was enlarged, with a quite sharp and extended lateral curvature to the right in the dorsal region and a slight one to the left in the lumbar region. In the pelvis the distortion was as great as that in the upper part of the body. The *ossa innominata* were nearly at right angles with the horizontal plane of the pelvis, the *ilia* being crowded inwards, while the *ischia* were directed outwards; the sacrum forwards and the pelvis slightly backwards and downwards. This position of the pelvis, together with the lower extremities, including the everted position and the curving outwards of the femora served to remind one of the old Egyptian lyre, as the outline thus formed was much the shape of the frame of one of these ancient instruments. This description of course does not apply to the body after it was straightened out.

The thigh bones were about eleven inches long, and their general outline has been sufficiently indicated. The upper extremities at the autopsy presented nothing of special importance except they were very small and so soft and flexible that they could easily have been tied in a knot. The only specimens of bone removed from the body were the upper left

of the right femur, with a part of the acetabulum, the sternum and a part of one rib. At the section of the femur only a trace of bony substance was seen adhering to the inner surface of the periosteum, but as we approached the head of the bone the cancellated structure became more characteristic, yet no where was so hard that it could not have been easily incised with an ordinary scalpel. When the periosteum was opened there run out quite an abundance of a sero-sanguineous fluid that completely enveloped, and seemed to permeate the liver-like substance that had taken the place of the medullary canal, and most all of the compact bone of the shaft. In the trochanters

there was an augmentation of the soft cancellated bony substance containing a large deposit of fat. The neck seemed to be shortened and the great trochanters extended above the articulation with the acetabulum.

In reference to treatment, I have already intimated that I did not attempt anything special in that direction. First, because

I had no faith in drugs to do him any particular good in the stage in which I had found him. Secondly, I do not believe I could have induced him, during the first two months that I knew him, to take medicine in sufficient quantities to produce any perceptible effect. Of his own will he took Horsford's acid phosphates a part of the time, and an infusion of senna occasionally, to move his bowels. I did induce him after awhile to try for a few days iodide of potas., syr. of sarsaparil., as I did pyrophosphate of iron and quin., but he concluded they did him more harm than good, so would not take them but a day or two. There is a pill, however, know as the Wagner, that I believe has been used with apparent good results, yet the only report of their use I have seen is the two cases recorded in the *London Practitioner*, in 1883. The formula is as follows: R. Phosphori gr. ⅓—ss., syr. simplicis ʒii. Mix well and add pulv. glycyrrhiza ʒiiss., pulv. gummi arab. ℈iv., pulv. gummi tragacanth ℈ii., m. fl. pil. No. 250. S. One twice a day and increase. With these a Dr. Bush claims to have cured two cases. The first, a woman thirty years of age, attacked a few weeks after childbirth; the pelvis was much distorted, she was unable to walk, and with the use of these pills, together with rest in horizontal position, she, after five months, was able to go up and down stairs without difficulty.

The second case, a woman aged fifty, was reduced almost to a skeleton and greatly deformed; thorax much affected, femora bowed and fractured. Treated in bed seven weeks, and took Wagner's pills. At the end of one and a half years bones firm and patient could walk without pains or discomfort. The deformity remained.

From my observations of this case I believe that wherever practicable a water bed, some ingenious method of effecting moderate extension together with a properly adjusted cast to

the chest might be of benefit to the sufferer. It would, I think, if applied early, have a tendency to preserve the natural shape of the thorax and counteract the contraction of the muscles upon which depend the various distortions of the skeleton and favorably modify the irritation of the sensitive tissues.

728 Lincoln Avenue.

ARTICLE III.

ON NERVOUS SYMPTOMS DUE TO OVERLOOKED ANOMALIES OF THE EYES AND EARS. *By* H. GRADLE, M. D., *of Chicago.*

[Read before the Chicago Medical Society, April 20th, 1885.]

In a paper read before the Illinois State Medical Association, at its last meeting, the author tried to point out the advantages of systematizing the search for the causes of disease,—not merely in theory, but also in the individual case. I there made a division of diseases as to their etiology, which though not new, indeed familiar to all of us, is sometimes not remembered at the right time. I distinguished between primary diseases and secondary affections. In the former instances some cause traceable to the outer world acts directly upon the parts involved in the disease, while, in the the latter class of cases, the symptoms are due to some other preëxisting primary disease, or lesion, or anomaly, somewhere in the body, perhaps at quite a distance. Of such secondary affections, I wish to present, to-night, various instances from my own observation, dependent upon anomalies of the eyes or ears. The special interest which these cases present is the fact that the local eye and ear symptoms were so insignificant that the primary trouble was either wholly overlooked—or at least not supposed to have any connection with the more annoying nervous symp-

toms in distant parts. The proof of this connection, however, was furnished in all these instances by the disappearance of the patient's complaints immediately following the proper treatment of the eye and ear difficulties. In none of these cases was any further active treatment pursued, except that coming within my special province.

The only region of the eye, the irritation of which I have ever known to cause disturbances at a distance, is the ciliary muscle. It is the condition of undue strain, to which this muscle is subjected, in hypermetropia and in astigmatism, which gives rise to so much remediable misery. The oculist sees almost daily people who have suffered for years from headaches and dizziness, and who are cured at once by a proper pair of glasses and perhaps the temporary use of atropine. But in most of these instances, the weakness of the eyes, the pain or the dimmed sight show the sufferer promptly that his eyes are at fault. It is hence not very often that we find the eye symptoms so slight as to escape the patient's attention. Still I have records of about twenty cases, observed during the last seven years, in which the patients, and generally their earlier medical attendants as well, had no definite idea that their misery was traceable to a defective state of their eyes.

The most frequent symptoms produced by eye-strain is headache. What I can say about this applies as well to the cases with manifest eye symptoms, as to those special instances in which no particular discomfort is experienced in the eyes. The headache is always frontal or temporal, though it may extend in nervous people over the entire head, even to the back of the neck. In some patients, the pain is constant; in another class, it occurs only after exertion of the eyes. But then such people usually know that the eyes are at fault. Perhaps most commonly a moderate pain exists, without intermis-

sion, but is made worse by work. The pain may be of variable severity. It is usually described as a dull ache. This headache, as well as the other symptoms to be described, has, in the experience upon which I base this paper, been permanently removed by the use of the proper spectacles. In some of the cases of astigmatism, it was necessary to keep the ciliary muscle paralyzed by the use of atropine or homatropine for a few days in order to have the glasses accepted.

It has been stated by several writers that hemicrania—the typical sick-headache—is sometimes due to refractive anomalies,—or rather to the eye-strain, which they engender. I cannot corroborate this from my own experience, tolerably large relative to refractive anomalies and at least fair in cases of migraine. I have never seen migraine cured by glasses alone. But I am ready to admit it may be one of the factors producing sick headache, and I have convinced myself that the correction of the eye-strain will facilitate the cure or at least the mitigation of migraine.

With or without headache, dizziness is a common result of eye-strain. This rarely amounts to any danger of falling or reeling, it is more commonly a dazed feeling, a difficulty of concentration upon any one subject, both of thought and of sight. Some patients have described it as a dullness scarcely distinguishable from a slight diffuse headache.

Not so common as the above complaints, have been symptoms of gastric disturbance in the patients under my notice. I have only seen four cases whose suspected stomach difficulty depended upon an overlooked anomaly of refraction, though I have had many other patients tell me that eye-strain, of which they were conscious, gave them a feeling of gastric uneasiness. The most remarkable one of these obscure stomach troubles was a man of thirty-three years, for whom I had prescribed

moderately strong concave cylinders in spectacle frame, on account of intense eye-strain headaches and dizziness. Three years later I saw the patient again, well satisfied, as far as his eyes were concerned. He had worn the glasses with perfect satisfaction, but had had a new pair made six months previously. Since that time he felt somewhat dazed, and frequently slightly nauseated, had lost his appetite and had acquired a loathing for food. The glasses I found to be correct in strength, but they were fitted in the form of eye-glasses, and hence the direction of their axes was not quite constant. The patient had wondered himself whether the eye-glasses were to blame, inasmuch as there were no other signs present of actual intestinal disease, the tongue and the state of the bowels being normal, and no vomiting or abdominal pain having ever occurred. After the patient had returned for a few days to his glasses, set in a rigid frame, all symptoms of stomach disorder disappeared promptly.

Ear-lesions may cause disturbances at a distance, almost indifferently as to the part of the auditory organ in which they are situated. I have records of about fifteen cases, in which the aural treatment surprised the patients by curing their complaints in distant parts. Although disease of the ear does not produce nervous disturbances as often as eye-strain does, still I could refer to quite a large list of other patients who had distant symptoms, but had traced them themselves to the local disorder.

It is well known that irritation of the walls of the meatus will produce cough in many persons, ex. gr., on touching with instruments. The continued occurrence of this reflex was illustrated by the case of a young man who had had a cough for some four months, coming on sometimes in distressing fits, which several physicians had failed to remove, so that he had resolved to cease all treatment. An eczema of the meatus,

which he supposed to have been there for several months, but to which he had not paid any attention, had lately spread further along the auricle, for which annoyance he called on me. After a single application of a strong solution of nitrate of silver to the well-denuded and scraped eczematous surface, his coughing fits never returned, and the slight bronchial irritation, which accompanied the trouble, disappeared during the next few days of treatment of the eczema. This cure of the cough was permanent, as I learned six weeks later. In another instance, a spasmodic cough in a child, the nocturnal attacks of which had kept the parents in a state of alarm for three weeks, was removed by taking a plug of exfoliated epithelial scales out of the auditory meatus.

In fact, this lesion—the scaling off of the epithelium of the meatus and its moulding into firm casts—I have found to be the most frequent ear disease causing distant symptoms. This peculiar disease of the epithelium is always accompanied by some interference with the permeability of the Eustachian tube, probably due to congestion, since it yields so readily to treatment, though less commonly it co-exists also with catarrh of the middle ear. The existence of these casts in the meatus does not always produce local symptoms, for the slight annoyance, to which they give rise, is overlooked by the less attentive patient, especially children. But in all my instances, the removal of the casts and the inflation of the middle ear made the ears and head feel clearer, even when the patient had considered his ears normal previously, perhaps on account of the gradual accustomance to the discomfort. The most frequent distant symptoms produced by this ear disease was headache, generally diffuse and often very persistent. In one case a young girl had been sent from the West to the East to consult some nerve-specialist, after having been treated by several

prominent physicians without success. She had nothing but persistent dull headache, which made her disinclined to work or play, and hence, though never a sharp pain, proved a serious affliction. She was brought to my office to get my opinion whether possibly the eyes might be at fault, which, however, was not the case. I then examined the nose and found it normal, but saw some slight post-nasal catarrh. This led me to question her as to her ears, which she considered perfectly well, as, indeed, her hearing was practically normal. But there were the above-described casts in both ears and some obstruction of the Eustachian tube. The removal of these casts cleared her head considerably, and the inflation of the middle ear made her feel perfectly well immediately. She then admitted that the ears did feel better than before the consultation. The pain returned slightly some hours later, but was neither as annoying nor as persistent as it had been. It disappeared gradually during the next two weeks under treatment of the post-nasal catarrh and inflation of the middle ear. In two other instances this exfoliation of the skin of the meatus and the subsequent formation of solid plugs had caused irregular attacks of headache and a dull feeling for several months, until finally a severe irregularly intermittent neuralgia of the fifth nerve on the side of the affected ear led to the detection of the ear disease. While vertigo accompanies quite often any disease of the middle ear, which increases the intralabyrinthine pressure, I have never observed dizziness without the patient being aware of his ear trouble, except in very young children. I have at least once seen a child of 3 to 4 years of age reel and stagger during several days while suffering from an acute nasal-catarrh, which had involved the Eustachian tubes, but had not perceptibly injured the hearing. The immediate improvement following inflation of the middle ear dispelled the parents' anxiety

about disease of the brain. In this connection, although perhaps foreign to the scope of this paper, I would call attention also to the frequency with which acute inflammation of the middle ear is overlooked in infants, whose intense suffering is ascribed to bowel disorder, sometimes even to pneumonia or brain-disease, until the discharge from the ear settles the diagnosis.

Spasmodic affections are occasioned not merely by irritative lesions of the ear. There are on record several instances of epilepsy and of spasm of the ocular muscles—nystagmus—produced by the presence of foreign bodies in the meatus. I have not had any such instances under my own observation, but I have seen clonic spasms of the eye-lids, that is to say, continuous twitching and winking, in a child of six years who had slipped a bead into its left ear some three weeks previously. The bead had reddened the meatus slightly, but caused no further local irritation and the child had been afraid to mention the accident. Within two days after its removal the blepharospasm ceased. One instance of spasmodic wry-neck has come under my observation as the result of irritation of the meatus and the middle ear. A child four years of age had had an acute otitis of the right side. The treatment had either been not active enough or had been discontinued too early, for the otorrhœa had not ceased. But the discharge, being very slight, formed crusts which the mother took for wax, and as the child did not complain of pain and had fair hearing, the ear was considered cured. Some four months later spasm of the right sterno-cleido-mastoid muscle began, increasing for a week and then remaining about uniform during the child's waking hours. Medical treatment of different kinds during the next three weeks had no effect. A slight increase of the otorrhœa brought the child

under my observation. I found a large polypus springing from the roof of the tympanum. After removing the same, the wry-neck became distinctly less, and disappeared entirely, together with the otorrhœa, on applying boracic acid powder during the following week.

555 N. Clark Street.

CORRESPONDENCE--DOMESTIC.

"DR. WARREN'S ADVICE."

An interesting relic has been recently found, in the form of a piece of paper containing advice to a patient, in the handwriting of Warren, who fell at Bunker Hill, and whose name is engraved on a stone to be found near the base of the historic shaft which marks the site of that famous battle. Warren, as every one knows, was a member of the medical profession, but no prescription written by him, has, so far as learned, been yet discovered.

The "advice" to a patient, referred to above, is written on a scrap of coarse paper, six by seven inches in dimensions, the handwriting being in the style commonly employed in the colonial and revolutionary periods of the history of this country, nowhere better illustrated than in the diary and other records written by the hand of General Washington. The paper is yellow with age, cracked in several places where it has been folded, and though it bears no signature, the endorsement clearly establishes the identity of the writer. The chirography has been also carefully compared with the diary and other papers left by Dr. Warren, now to be seen in the old South Church and in the Public Library of Boston. Judge Chamberlain, of that library, having made this comparison, declares the manuscript to be genuine and actually written by the hero of Bunker Hill.

It is endorsed on the reverse in the hand of the writer,

"Dr. Warren's advice," and bears in another part the words, "Mr. Pitts." It reads as follows:

"Mr. Pitts will please to take a teaspoonful of the volatile tincture of guiacum, night and morning, in hot water—and two or three teaspoonfuls of the tincture of the bark, daily at noon, in any convenient vehicle.

"He will please to use a diet moderately generous, using such exercise as he can bear without fatigue, and to keep the body open with occasional doses of tincture of hieropicra, about a tablespoonful at a time, or more if on experience it should be found that this quantity should be insufficient to procure the necessary evacuations.

"The astringent applications to the part affected should be continued for several weeks at least, or till it shall arrive at its former size."

The whole is concluded with one of those intricate flourishes which at that time served even better than either initials or the name in full to indicate the identity of the writer.

This interesting paper is in posession of one of the members of the Chicago Historical Society, whose monograph on the Dearborn family has heretofore served as the text for some editorial comments in these columns upon the physicians of the revolutionary period.

Through the kindness of Mr. Daniel Goodwin, Jr., to whom reference is made, we have been permitted to copy the original. J. N. H.

Chicago.

EDITORIAL.

THE AMERICAN MEDICAL ASSOCIATION.

The recent annual meeting of the American Medical Association, in New Orleans, presented a remarkable contrast to the meeting held in the Crescent city sixteen years ago. The number of physicians in attendance was large,—about eight hundred,—and thoroughly representative. Texas, alone, contributed a contingent of over one hundred. The reception given to the members of the Association by the physicians of New Orleans was cordial and hospitable, in the extreme, contrasting sharply with the entertainment in 1869,—when the "desolated homes and shattered fortunes demanded too much of the time of many Southern physicians to permit their attendance, while others had not sufficiently buried war memories to clasp hands in cordial greeting with their brothers of the North, so that many of each section failed to be present." The receptions of Dr. and Mrs. T. G. Richardson, Mr. and Mrs Cartwright Eustis, the members of the New Louisiana Jockey Club, on Wednesday evening, and of the medical profession, assisted by the ladies of New Orleans, on Thursday evening, were pleasant occasions, reminding us vividly of the words of a great physician: "The parts and signs of goodness are many. If a man be gracious and courteous to strangers, it shows he is a citizen of the world, and that his heart is no island cut off from other lands, but a continent that joins to them."

Dr. Henry F. Campbell, the President, in his address, alluded to "the father of the Association," and the editor of the *Journal of the American Medical Association*, in the following words:

"Too full of the meekness of wisdom to be elated by praise.

too worthy of praise to be defiled by flattery, and among all the living, standing foremost in the duration and constancy of his devotion, I could ask you to allow me, by virtue of the authority in which I am clothed, to bid him stand, as sovereigns bid their heroes kneel, and dub him with the ensign and the title, '*Noblest Roman of us all.*'"

Dr. Campbell's recommendation that a committee be appointed to consider the expediency of organizing, or of rehabilitating a section of forensic medicine, was favorably received, and a committee was selected.

The Journal of the American Medical Association will continue to be published in Chicago, under the editorship of Dr. N. S. Davis.

The work of the Sections, all things considered, was highly creditable.

The numerous papers, read before the Section on Obstetrics and Diseases of Women, were the result of the activity of the officers of the Section, Dr. R. S. Sutton, of Pennsylvania, and Dr. J. T. Jelks, of Arkansas.

The Medical News, one year ago, urged the importance of allowing each Section to select its own presiding officers, instead of relegating the work to the General Nominating Committee.

On Thursday, Dr. W. W. Potter, of Buffalo, N. Y., called up the amendment to the by-laws, offered last year by Dr. Foster Pratt, of Michigan, authorizing this change. After considerable discussion, the amendment was laid over for consideration next year. The utterly inadequate representation of the profession in certain Sections at the last meeting contains a pointed moral

We earnestly hope that all who are sincerely concerned for the welfare of the Association will urge the adoption of Dr. Foster Pratt's amendment, at the next meeting, in St. Louis.

OBJECTIVE DIAGNOSIS.

At the last annual meeting of the *American Medical Association*, in the section on *Obstetrics and Diseases of Women*, Dr. S. C. Gordon, of Portland, Maine, read an interesting and valuable paper, entitled "*Reasons for and Results of Some Cases of Tait's Operation.*"

Dr. Gordon's paper was suggested by an incident which occurred at the last *International Medical Congress*, at Copenhagen. Sir Spencer Wells, Bart., in criticism of the communication by Koeberlé, of Strasbourg, said: "As regards castration of women for nervous disease, we might just as well go about the country cutting men for similar disease as to do what is being done in removing ovaries of women. I believe that in no case should the ovaries of a woman be removed, unless we can demonstrate beyond all doubt that there is actual disease." In reply to Dr. Gordon's question: "Do you mean by demonstration only that which can be made by touch?" Sir Spencer Wells said: "Yes, most emphatically!"

Dr. Gordon, in the paper to which allusion has just been made, after referring Sir Spencer Wells' adverse criticism of Tait's operation to his well-known personal aversion to that distinguished surgeon, cited seven cases in which he had performed Tait's operation, with benefit to his patients, in the absence of tangible evidence of ovarian or tubal disease. He thought that a critical analysis of subjective symptoms, through a sufficiently long period of time, in the utter absence of positive evidence elicited by touch, could establish a diagnosis of a pathological condition of the uterine *adnexa* with such a degree of probability as to indicate operative procedure.

The subjective symptoms, to which special importance was attached, are pre-menstrual pain, irregularity of menstrual function, circulatory disturbances, and a peculiar mahogany-

bronze color of the skin of the face. This peculiar *cutis ænea* resembles closely the bronze discoloration observed in Addison's disease.

Dr. Gordon's paper excited much discussion. Dr. William H. Wathen, of Louisville, Ky., thought the doctrine of operation, without distinct objective evidence, was erroneous, absolutely, and pernicious in its tendencies. We cannot but think Dr. Wathen's stricture well founded. All the rational signs and extraneous symptoms deserve to be carefully inquired into and noted, but the testimony derivable from them cannot, in the present state of our knowledge, amount to more than a high degree of *probable* evidence. It is only in very exceptional cases that such a degree of probability is established as would justify such a radical procedure as Tait's operation.

Moreover, the *tactus eruditus* is capable of wonderful development. The methods at our disposal for the local examination of the female genital tract are numerous, and in the majority of cases adequate.

By means of inspection of the vulva and abdomen, auscultation and percussion of the abdomen, palpation of the abdomen, digital examination, vaginal, rectal, vesical, conjoined examination, vagino-abdominal, recto-abdominal, vesico-abdominal, digital eversion of the rectum, every portion of so small a space as the pelvic cavity can usually be thoroughly explored, and that, too, without serious injury to the patient. As important adjuvants, we have posture and anæsthetics.

It is well to remember, in this connection, the teachings of Oppolzer and Hebra. Oppolzer's famous diagnosis of strangulated hernia by palpation, after the rejection of the case at the Surgical Clinics of the Vienna General Hospital, is familiar to all students of the history of medicine. The elder Hebra was accustomed to say: "Gentlemen, recollect your pathological anatomy and make an objective diagnosis."

SOCIETY PROCEEDINGS.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.—*Friday Evening, March 20, 1885. Regular Meeting.* I.—THE INFLUENCE OF CIMICIFUGA RACEMOSA UPON PARTURITION, *by* J. SUYDAM KNOX, M. D. II.—SOME REMARKS ON THE VALUE OF PERMANGANATE OF POTASH IN AMENORRHŒA—*Inaugural Thesis, by* EDMUND J. DOERING, M. D. III.—REPORT OF A CASE OF HYSTERECTOMY FOR INTRA-MURAL MYOMA, *by Professor* E. C. DUDLEY, M. D.

The President, DR. P. H. MERRIMAN, in the chair.

I. Professor J. Suydam Knox read a paper entitled, "The Influence of Cimicifuga Racemosa upon Parturition."

After a *résumé* of the medical history of the drug, Professor Knox gave the results of his clinical observations in one hundred and fifty cases of labor,—fifty-seven primiparæ, ninety-three multiparæ,—in which black cohosh had been exhibited. The average duration of the first and second stages of labor, in normal cases, in primiparæ, was seventeen and three hours, respectively. Under the influence of black cohosh, the duration of the first and second stages of labor, in the fifty-seven cases observed, was six and one-quarter, and one and three-quarter hours, respectively. The average duration of the first and second stages, in normal cases, in multiparæ, was twelve and one hours, respectively. Under the influence of black cohosh, in the ninety-three cases observed, the average dura-

tion of the first and second stages was three hours, and twenty-seven minutes, respectively.

From these clinical observations Dr. Knox drew the following conclusions:

"1. Cimicifuga has a positive sedative effect upon the parturient woman, quieting reflex irritability. Nausea, pruritus and insomnia, so common in the last six week of pregnancy, are always rendered less distressing, and often disappear under its administration.

"2. Cimicifuga has a positive anti-spasmodic effect upon the parturient woman. The neuralgic cramps and irregular pains of the first stage of labor are ameliorated, and often altogether abolished. In fact, during the first indiscriminate use of the drug in all cases, I had the mortification, with a few women, of terminating the labor so precipitately, and without prodromic symptoms, as to be unable to reach the bedside before the birth.

"3. Cimicifuga relaxes uterine muscular fibre, and the soft parts of the parturient canal, by controlling muscular irritability, thus facilitating labor and diminishing risks of laceration.

"4. Cimicifuga increases the energy and rhythm of the pains in the second stage of labor.

"5. It is my belief that cimicifuga, like ergot, maintains a better contraction of the uterus after delivery.

"It is my habit, however, to administer fifteen to thirty minims of the fluid extract of ergot after the birth of the fœtal head, and I have had but few opportunities of testing this effect of the cohosh.

"My method of administration has been to give fifteen minims fluid extract of cimicifuga in compound syrup of sarsaparilla each night for four weeks before the expected confinement.

"One fluid ounce of the fluid extract of cimicifuga to three fluid ounces of compound sarsaparilla,—dose, one teaspoonful,—makes just the required quantity."

Discussion.—Dr. Philip Adolphus had employed the cohosh in the manner indicated by Professor Knox, in one case, with negative results.

Dr. Edward Warren Sawyer thought the results obtained by Professor Knox were astonishing. He thought there could be no doubt that the drug had the physiological action to which allusion has been made. He would, at once, act upon the suggestion in his private practice.

Professor W. W. Jaggard thought that if the influence upon parturition, so clearly sketched by Professor Knox, was capable of demonstration, he could agree with Dr. Sawyer's panegyric. Professor Knox's carefully prepared paper was worthy of study and investigation. Dr. H. Webster Jones, formerly a prominent obstetrician in Chicago, had advanced similar views, with reference to the physiological action of black cohosh, in a paper published in the *Transactions of the Illinois State Medical Society*, a few years since. Dr. Jones's advocacy of the drug as an oxytocic was well known to every practitioner in the city.

Professor Jaggard desired to call the attention of the Fellows to the following subjects in Professor Knox's paper:

I. Professor Knox had stated that the average duration of the first stage of labor in primiparæ and multiparæ was, respectively, seventeen and twelve hours; under the influence of black cohosh, the duration of this stage was abbreviated to six and one-quarter, and three hours, respectively. It was a matter of extreme difficulty to define the limits of the duration of the first stage of labor with such mathematical accuracy. The "personal equation" assumes great importance as a possible source of error. The subjective signs and the results of physical exploration are not always sufficient to justify the diagnosis of the commencement of labor. Thus, Dr. R. Lumpe

(Archiv. für Gynaekologie, 1883, Bd. XXI. Hft. I, p. 29) concludes, from the observation of several hundred primiparæ, that the cervical canal begins to dilate from eight to fourteen days before the expulsion of the child. Other observers assign a period of much briefer duration than the typical seventeen hours of Spiegelberg, to which Dr. Knox alluded.

Apart from the difficulty in the determination of the commencement of the first stage, the duration is capable of infinite individual variation.

II. One hundred and fifty cases were insufficient to warrant such positive deductions upon an intricate therapeutical problem. In every one of the cases cited by Dr. Knox, it was clearly indeterminate whether or no the effect was *post hoc* or *propter hoc*.

Black cohosh had been employed, on an extensive scale, in large lying-in hospitals in Germany. Every condition for accurate clinical observation had been supplied. Such conditions were: competent observers, numerous cases, under absolute control for a sufficient period of time, chemical purity of the drug, and an approximately perfect system of keeping records. Up to the present time, results had been of a purely negative character. It was true that Schatz had reported favorably as to the action of the drug in the treatment of certain pathological conditions of uterus.

Dr. Jaggard did not wish to be understood as dogmatically condemning the drug. The evidence in favor of its action as an oxytocic, as collected from experiments upon the lower animals, or from clinical observation, was entirely insufficient to warrant the positive conclusions of the author of the paper. The subject was worthy of further investigation.

III. He thought the practice of the exhibition of ergot, before the completion of the second stage of labor, was repre-

hensible. It was in conflict with the obstetrical principles of the day, as deduced from clinical experience, and the nature of the case. This remark was applicable exclusively to physiological labors.

Professor Charles Warrington Earle had used black cohosh, at the suggestion of Dr. Jones and Professor Knox, in a variety of cases, with negative results. He had about the same number of precipitate labors as occurred in his practice prior to the introduction of the drug. It was possible that he had not employed doses of sufficient size, nor for a sufficient length of time before labor.

Dr. Henry T. Byford wished to enter a protest against all methods of rendering the process of labor shorter. Quick labors were wrong labors, as a rule.

Dr. George M. Chamberlain had no experience with black cohosh, but he was opposed to the exhibition of ergot before the expulsion of the child in physiological cases.

Professor Knox closed the discussion.

In reply to Professor Jaggard, he said that the results of his clinical experience with black cohosh were of such a convincing character, that he would continue the exhibition of the drug in the future. In regard to the exhibition of ergot, before the expulsion of the child, he did it to save time. The drug was not absorbed until twenty minutes after exhibition, and long before the expiration of that time the child was born. He could not spare the twenty minutes, required to secure retraction of the uterus, after delivery of child and placenta. In reply to Dr. H. T. Byford, he said that, at the present day, there were no physiological labors. Women were not Eves. By the judicious use of a drug, like black cohosh, labor was made to resemble the ideal, physiological process, as still observed among savages.

II. The Secretary then read the inaugural thesis of Dr. Edmund J. Doering M. D., (Chicago Medical College, 1874), entitled, "Some Remarks on the Value of Permanganate of Potash in Amenorrhœa."

After a brief description of the physical and chemical character of the drug, Dr. Doering discussed its physiological action. Bartholow, who has great faith in the drug, claims that although it parts with its oxygen with great readiness, the readiness is *not* sufficiently great to prevent the distribution of the gas into the blood. "His opponents deny this, and argue that the organic matter contained in the stomach and mucous membranes is sufficient to appropriate the oxygen of the salt and thus prevent its entrance into the circulation."

Professor N. Gray Bartlett, a Chicago chemist, gives the following opinion:

"From the readiness with which the permanganate of potassium is decomposed by organic compounds, it would seem to be ineligible for universal use. When so administered, it is immediately brought into contact, in the stomach, with a relatively large amount of organic matter and necessarily is very rapidly destroyed, the manganese of the permanganate separating, in all probability, in the form of the hydrated manganese dioxide. The latter compound is an active oxidizing agent, and is possibly capable of exercising in the economy the oxidizing function, which has been ascribed to the permanganate of potassium. It would seem rational, therefore, anticipating the change which follows the administration of the permanganate, to substitute the hydrated dioxide of manganese, which can readily be prepared in a state of purity for medical use."

Whatever view may be adopted as to the chemical change which the permanganate undergoes in the human economy, the main question is as to its therapeutic value.

Professor T. Gaillard Thomas, M. D., in his address to the New York State Medical Association, expresses faith in the value of the drug as an emmenagogue. Dr. Ringer and Dr. Murrell recommend the remedy. Dr. Doering had given the drug a careful trial in thirty cases of amenorrhœa, depending upon anæmia and general atony of the sexual apparatus. In about half the cases the observations were unsatisfactory, from various causes, *i. e.*, inattention to the general directions, want of perseverance in taking the medicine, so that the conclusions arrived at were based upon fourteen cases, in each of which the cause of the amenorrhœa was entirely clear, the remedy carefully and continuously given, and the effect clearly observed.

The cases were tabulated.

Conclusions.—I. Permanganate of potash in doses of from two to four grains is an efficient emmenagogue, if administered for a period of not less than two weeks.

II. Its administration in doses large enough to be effective is accompanied by severe pain, which frequently necessitates discontinuance of the remedy, and hence impairs its value as an emmenagogue.

III. The most efficient method of administering the drug is in capsules, taken midway between meals, and followed by draughts of some pure mineral water, like silurian.

Dr. Doering was elected Fellow of the Society.

Professor E. C. Dudley gave a very brief report of a case of hysterectomy for intra-mural myoma; the uterus, ovaries and tubes of which were exhibited at the February meeting of the Society.

The patient died of general peritonitis on the sixth day after operation.

The next meeting of the Society will be held on Friday evening, April 17th, 1885, at the Palmer House.

Programme.—Remarks upon chronic peri-uterine abscess, by Professor Christian Fenger, M. D., with the exhibition of specimens.

II. Remarks upon a Teratom, by W. W. Jaggard, M. D., with presentation of specimen.

III. A paper by Henry T. Byford, M. D.; subject to be announced.

W. W. JAGGARD, M. D., *Editor.*

2330 Indiana Avenue.

March 21st, 1885.

BOOK REVIEWS.

TRANSACTIONS OF THE THIRTY-FOURTH ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY, HELD AT CHICAGO, MAY 20, 21 and 22, 1884.

The Transactions of the Thirty-fourth Annual Meeting of the Illinois State Medical Society is an interesting and valuable volume. The papers are numerous, important, and exhibit more than the usual amount of original investigation. Professor H. A. Johnson's Case of "Bilateral Paralysis of the Abductor of the Vocal Chords" will attract general attention, as a clear, distinct exposition of a relatively rare pathological condition. The case was seen in London by Morrell Mackenzie and Lennox Brown, who concurred in Professor Johnson's diagnosis and treatment.

Professor Christian Fenger contributes two important papers, "Excision of Hip and Knee Joints, with Exhibition of Patients," and "On Surgical Treatment of Gangrene of the Lung."

Professor Fenger's views, on these subjects, are so well known to the profession that it is not necessary to allude to them in detail. Unfortunately, there was no discussion of the subject matter of Professor Fenger's paper,—a fact to which Dr. E. P. Cook, of Mendota, alluded in well chosen terms at the time. A paper on "Vaccination," presenting facts known for an indefinite period of time, on the other hand, was sufficient to provoke a very lively debate.

Professor D. W. Graham's paper, entitled, "A Case of Goitre

with Obstruction," is a valuable contribution to the literature of the subject.

Professor Charles Warrington Earle's paper, entitled "Four Cases of Pancreatic Anæmia," was one of the most interesting contributions to the department of internal medicine.

The members of the Committee on Publication deserve much credit for the selection of papers for publication, and for the many technical excellencies of the volume. W. W. J.

THE STORY OF MY LIFE. *By* J. MARION SIMS, M. D., LL.D. *Edited by his Son*, H. MARION-SIMS, M. D. *New York:* D. APPLETON & CO. 1884. *12mo., pp. 471.*

As an autobiography, "The Story of My Life" is a unique book. It reads like a romance. With characteristic simplicity and guilelessness, the great clinical surgeon has given to the profession, and the world at large, a graphic portraiture of the evolution of a South Carolina lad into one of the greatest modern benefactors of his race.

"Mine," says he, "has been a real romance, full of incident, anxiety, hope and care; some disappointments, and many successes, with much sickness and sorrow; but it has also been full of joy, contentment, and real happiness."

A priceless heritage, "The Story of My Life" deserves a place on the same shelf with "Plutarch's Lives." As a vivid picture of contemporaneous medical history, American and European, the value of the book is great. With a keen analytical eye, Sims has drawn pen-sketches, with critical accuracy, of the modern heroes of medicine. Simpson, Nélaton, Trousseau, Civiale, Ricord, Chassaignac, Larrey, Huguier, Velpeau, Baker Brown, Malgaigne, Thompson, Erichsen and others

have assumed living forms under the influence of his magic pen.

Finally, he has magnanimously shielded from public scrutiny the anomalous conduct of his New York *confréres*, in connection with the establishment and perpetuation of the Woman's Hospital.

The reviewer's task is light. Every member of the medical profession will appreciate the book, and many will possess it.

Already it has been translated into foreign languages, and the first German edition is nearly exhausted.

The book is marred by an injudicious introduction of twenty-eight pages, from the pen of an intimate friend. The statement is made in this introduction that Sims, in 1863, was authoritatively recognized as "the foremost clinical surgeon of the age." As a contemporary of v. Langenbeck, Billroth, Péan, Lister, Volkmann, König, Esmarch, Wells, Keith, Paget, Erichsen, Thompson, Gross, Bigelow, the elder Pancoast, Nélaton, the statement appears remarkable.

The harsh sectional allusion to General W. Tecumseh Sherman,—"That commander bore among his baptismal titles, as if in forecast of his military career, the name of a sanguinary Indian savage,"—is irrelevant, in bad taste, and opposed to Sims' own views upon the subject.

In connection with Sims' speculum, Dr. Emmet's very remarkable and extravagant statement is quoted:

"From the beginning of time to the present, I believe that the human race has not been benefited to the same extent, and within a like period, by the introduction of any other surgical instrument."

W. W. J.

HAND BOOK OF THE DIAGNOSIS AND TREATMENT OF SKIN DISEASES. *By* ARTHUR VAN HARLINGEN, M. D. *Professor of Diseases of the Skin in the Philadelphia Polyclinic and College of Graduates in Medicine, etc., etc. With two colored plates. Philadelphia:* BLAKISTON, SON & CO. 8 vo., *pp. 282.*

The author of this little manual has become well known to the profession by his previous valuable contributions to Dermatological literature. Among the most important of these may be named a full description of the medicinal eruptions, which appeared in the *Archives of Dermatology*, in Oct. 1881; a concise chapter on diseases of the skin, in the American edition of Holmes' System of Surgery; together with papers on scleroderma, the pathology of serborrhœa, etc., which have from time to time appeared over his signature in print. By education and experience, the author is well fitted for his task.

In the limits of a small volume like the present, one can look for but little beside a compendious statement of what is known and accepted on the subjects considered. Indeed, the demand is for scrupulous omission of all points open to serious discussion. As a result, the pages before us are well adapted to the needs of those for whom the work was probably intended, viz: busy practitioners and students who either can not or will not consult the larger treatises. For the sake of convenience, the names of all diseases of the skin are here arranged in alphabetical order, with references by which each can be readily assigned to its place in the nine chief divisions recognized in the Hebra classification and adopted by the American Dermatological Association. It is proper to note in passing, however, that at its late meeting the American Dermatological Association reduced the number of these classes to eight, by the omission of that which originally included

"ulcers." When it is considered that an ulcer always is the result of a precedent pathological process, the reason for such a modification in the interests of a simple and scientific classification becomes apparent.

Dr. Van Harlingen's hand-book is decidedly in advance of all its competitors among the smaller manuals, in point of practical suggestiveness. It is well named a hand-book of "Diagnosis and Treatment." Eczema in its protean characters furnishes always the best test of an author's ability to successfully meet the exigencies of practice; and upon this subject the therapeutical hints given in the book before us, are eminently valuable. About one-seventh of the volume is devoted exclusively to the treatment of the several varieties of eczema, and it would be difficult to find in any work a safer and more trustworthy exposition of the several intricate problems presented in therapeutic management of that disease.

The two colored plates can scarcely be said to add much to the value of the manual. In other respects, the typographical appearance of the pages is all that could be desired.

J. N. H.

A TEXT BOOK OF HYGIENE: A COMPREHENSIVE TREATISE ON THE PRINCIPLES AND PRACTICE OF PREVENTIVE MEDICINE, FROM AN AMERICAN STANDPOINT. *By* GEORGE H. ROHE, M. D., *Professor of Hygiene, College of Physicians and Surgeons, Baltimore, etc. 8vo., cloth, pp. xv., 324. Baltimore:* THOMAS & EVANS. 1885.

This little handbook, printed in large type, will probably find its way into the hands of a multitude of readers, among the laity as well as the profession. It treats of the following: Air, Water, Food, Soil, Sewage, Habitations, Hospitals, Schools, Occupation, Military and Marine Hygiene, Prison

Exercise, Bathing, Clothing, Disposal of the Dead, Contagious and Epidemic Diseases, Antiseptics and Disinfectants, Quarantine and Vital Statistics. Although each of these subjects is treated of in a concise manner, the bibliography at the end of each chapter will render more extensive study very easy. The clear, intelligent style of the author will be especially appreciated by popular readers, and it is to be hoped that this will be followed by many and more extensive editions. The weak points and deficiencies of the book partake of the hygienic ignorance of the times, made more manifest by the rapid advance of architecture, commerce, and the requirements of political economy, and will disappear as experimental hygiene is more thoroughly tested. H. D. V.

NEWS ITEMS.

The Illinois State Medical Society, at its annual session, recommended to the Legislature of this State the enactment of the following bill, prepared by the committee appointed by the society for that purpose:

A Bill for an Act to provide for the Commitment of the Insane.—Be it enacted. First, That the judges of the courts of each judicial district shall, jointly, nominate to the Governor, within sixty days next after the passage of this Act, two physicians in each county best qualified to act as Commissioners of Insanity.

Second, That the Governor, within thirty days next after the reception of such nomination, shall appoint the said two physicians to be Commissioners of Insanity in and for each of said counties respectively.

Third, That the said two Commissioners so appointed, together with the Judge of the County Court, in and for each of said counties, respectively, constitute the Board of Commissioners of Insanity for said county.

Fourth, That the said Board of Commissioners have exclusive and complete jurisdiction of all matters pertaining to the commitment and custody of the insane, and power and authority adequate to the determination thereof.

Fifth, That affidavit of alleged insanity be made to the Clerk of the County—*ex-officio* Clerk to the Board of Commissioners of Insanity—to be reported by him to the Judge of the County Court—*ex-officio* President of the said Board—within twenty-four hours of the date of the said affidavit.

Sixth, That the alleged insane person be examined by each and all of the said Commissioners, privately, publicly, separ-

ately or jointly, as may be deemed, by each, necessary to the determination of the truth.

Seventh, That insanity be determined only by unanimous decision of the said Board.

Eighth, That, in case of disagreement, the minority may demand, and the Board must grant, a re-examination.

Ninth, That the said Board, having determined the insanity of any one, shall order his (or her) commitment, if curable, to a State hospital for the insane, if incurable, to a county asylum, or to such other custody as may seem best adapted to the circumstances of any special case.

Tenth, That each of said Commissioners, so appointed, receive the sum of —— dollars for each and every case of alleged insanity examined by him, and in addition thereto the sum of —— —— for each and every mile necessarily traveled by him to and from the places of holding said examination, the same to be paid as fees to jurors hitherto.

Eleventh, That the term of service of one of said Commissioners, so appointed, be three years, to be determined by lot; that of all others to be five years—in order that a majority of said Board may always consist of old members.

Provided, That nothing in this Act shall be construed to prevent the trial by jury, as at present, of any alleged insane person who may, either personally or by his or her friends, elect that mode of examination; and that for all such cases the statutes now in force shall continue effective.

The law now in force in this State, in its practical working, does violence to the feelings of many persons, charged with being insane, by being brought into open court and tried by jury. No doubt the shock thus sustained is prejudicial to their welfare, and some more humane method of proceeding should be adopted. The bill proposed, if enacted by the present Legislature, as it is hoped it will be, will do much to relieve such unfortunates from the evils attendant upon jury trial, and yet leaves the right of trial by jury in cases where for any reasons it may be demanded.

ABSTRACTS AND EXTRACTS.

OBSTETRICS AND GYNÆCOLOGY.

Labor and Child-Bed in Elderly Primiparæ.—Dr. F. Steinman, of St. Petersburg, contributes to the *Archiv für Gynakologie* (Band xxii., Heft 3) an article on the above subject. His method of investigating it is not the same as that of Dr. Kleinwächter (of whose researches we recently placed an abstract before our readers). Dr. Kleinwächter compared the facts at his disposal relating to elderly primiparæ with those relating to younger subjects in the same clinic, and therefore under circumstances as nearly as possible identical. Dr. Steinman compares the histories of elderly primiparæ at St. Petersburg with averages assumed to be true of labor in general. This method seems to us more open to objection than that of Kleinwächter; for exceptional features shown to be present in the St. Petersburg elderly primiparæ might be partly, at least, due to peculiarities in the patients, or in the working of that particular institution. Kleinwächter, by comparing patients of the same place and under the same conditions, differing only in age, seems to us to have worked on a method more likely to give correct results. With this explanation we put Steinman's conclusions before our readers. It will be seen that in some important respects they agree with Kleinwächter. (1) The only results that are comparable are those of authors who have collected their material in lying-in hospitals; figures

based on private practice, out-door maternities, and published cases show exceptionally unfavorable results in elderly primiparæ; an exceptionally high percentage of mal-presentations and narrow pelves, and a correspondingly great frequency of operations, of morbility, and mortality, maternal and infantile. (2) The proportion of elderly primiparæ is greater at St. Petersburg than at Marburg or Munich. (This, we think, illustrates our criticism.) (3) Twins are slightly more frequent than in other cases. (4) Transverse and pelvic presentation are somewhat more frequent than common. Face presentations are rather less common, this being the contrary to what other statistics show. (5) Narrow pelves are more common than in other cases. (6) operations are more frequent, especially the forceps, than in other cases, even with normal pelves; from which it would appear that weak uterine action is common. (7) Spasmodic contraction of the uterus and eclampsia are observed considerably more often than in other cases. (8) With increasing age of the primiparæ, rupture of the perineum is more frequent, and more seldom heals. (9) The morbility is increased correspondingly to the increased frequency of complications shown in the foregoing; and elderly primiparæ are more liable to accidental intercurrent disease during childbed than others. (10) Consequently both the general and the purely puerperal mortality in them is increased. (11) Albuminuria and kidney diseases are seen more often in elderly primiparæ than in others, both in pregnancy and in lying-in. (12) The mortality of children of elderly primiparæ is nearly three times as great as that of others in the St. Petersburg clinic; this increase being mainly due to the large number of children dying during delivery.

Remote Puerperal Hemorrhage.—At a recent meeting of the New York Obstetrical Society (*New York Medical Journal*),

Dr. Gaillard Thomas referred to some examples he had recently met with of the condition which the late Dr. McClintock termed "remote or delayed puerperal hemorrhage," in which the bleeding comes on three weeks or a month after labor, when the practitioner has ceased making his visits. The uterus may have contracted after labor, and everything have gone on properly until the ninth day or so, when the physician ceases his daily visits, but from that time the woman begins to lose blood steadily. If she makes a little additional effort, or if anything occurs to cause considerable mental excitement, an exceedingly dangerous hemorrhage may take place, which will require to be checked by the tampon. If sudden and profuse hemorrhage does not occur, requiring the services of a physician immediately, a steady loss of blood in moderate amount may continue for a week or ten days, until the woman becomes very much exhausted. Dr. Thomas has met with many of these cases, and he detailed the particulars of one which were of considerable interest. The lady who formed the subject of the case had ten months before come under his notice for aggravated vaginismus, which quite precluded connection; but after an operation had been performed she immediately conceived. About the end of the seventh month the veins leading from each labium became greatly enlarged, the parts presenting the appearance of a mass of earth-worms of the size of a fist—a condition which Dr. Thomas has seen in so marked a degree only once or twice before. On the ninth day after delivery at the full time hemorrhage came on, and the various remedies, except the tampon, were tried in vain to arrest it; and about three weeks after delivery she was seized with violent and very profuse hemorrhage after she had got out of bed, which reduced her very much. Each time that this occurred it was preceded by the passage of a large

blood-clot. Dr. Thomas was now sent for and came prepared for the removal of the remains of membranes, the retention of which he felt sure was the cause of the hemorrhage. Her attendant, however, felt very positive that none of the membranes had been left, as he had examined the placenta very carefully and found no interruption of its continuity existing. Dr. Thomas, feeling equally positive that some of the placenta was still in the uterus, the patient was placed on a table for examination and ether attempted to be employed. At this she sprang up in a state of wild excitement, refusing the inhalation from the recollection of having suffered so much from it during the operation for vaginismus. All persuasion was futile, and Dr. Thomas refused to resort to compulsion, as suggested by her friends, having seen under such circumstances violent mania developed. "I think," Dr. Thomas says, "we cannot be too careful as to doing that which is strongly opposed to the will of a puerperal woman. I would rather run the risk of a violent hemorrhage in this case than have forced the patient to take ether. She was spoken to kindly and put back into bed." Next day she submitted to be etherized, and the canal having been dilated, the curette was passed in and three pieces of placenta, each as large as the last phalanx of an index finger, were removed, very little hemorrhage ensuing. "With regard to the statement so often made, that the placenta has been carefully examined and found entire, it usually amounts to nothing. In the first place, we know that the physician commonly looks at the after-birth hastily, and in a careless manner. Besides, I believe that little pieces may be broken off, and remain behind, which no man could recognize from an examination of the placenta, though he examined it with the utmost care. As in this case, so in all others of delayed puerperal hemorrhage that I have met with, it has been

due to retained placenta or membranes. Dr. McClintock mentioned a case in his practice, which, I believe, proved fatal. I have met with some which very nearly proved fatal, and doubtless some of those present have encountered similar cases."

Laparo-Myotomy.—A recent number of the *Zeitschrift für Geburtshülfe und Gynäkologie* (Band x., Heft 1) contains an interesting article on the above subject by Dr. R. Kaltenbach, of Giessen. He relates seven cases of the operation in question, and then discusses the general subject. Among his cases, the one that seems to us of most special interest was that of a patient who was able to tell in which ovary ovulation was going on by the presence of burning pain, which began eight days before each menstrual flow, and was felt in the situation of the ovary that was active. The operation was performed three days before the expected advent of the flow. Before it was done the patient indicated the left ovary as the one which was ovulating, and there was tenderness on pressure over its situation. At the operation a freshly-ruptured Graafian follicle was found in this ovary. Dr. Kaltenbach has published in a former paper three other cases; these, with those now published, make ten, of which nine have been successful. Two of them were cases in which a pedunculated fibroid was removed; the remainder cases of supra-vaginal hysterectomy. The fatal case was one of the latter. The pedicle in the former cases was treated by the intra-peritoneal, in the latter by the extra-peritoneal method. The author discusses the different methods of dealing with the stump. Although the extra-peritoneal method has hitherto been attended with the better results, yet Dr. Kaltenbach does not regard its superiority as certain to be permanent. He expects improved results from the mode of intra-peritoneal treatment, which consists in the suture of the perito-

neum over the stump, with the ligature of the uterine and ovarian arteries on each side. If the extra-peritoneal operation is done, Dr. Kaltenbach prefers the treatment of the stump after the method of Hager, viz., by chloride of zinc; 100 per cent. solution of which is applied to the surface of the stump, 5 to 10 per cent. solution to the lateral parts of it, and chloride of zinc wool of 2 to 5 per cent. strength packed around the stump.

The Anatomy and Pathology of the Labia Minora.—Dr. Henri Carrard, of Bern, contributes to the *Zeitschrift für Geburtshülfe und Gynäkologie* (Band x., Heft 1) a paper on the above subject. He had occasion to examine the labia minora removed on account of hypertrophy; and in order to be able to judge how far these were morbid, he examined a series of healthy labia. He remarks on the scanty information on the subject to be found in literature. Hildebrandt refers *pruritus vulvæ* to a dilatation of the vessels of the nymphæ, basing this view on one case in which these parts looked redder than normal. In Dr. Carrard's case there was pruritus, but he found no evidence of enlargement of the vessels. There is divergence of opinion as to the covering of the labia minora; some say it is skin, others mucous membrane. Dr. Carrard says that although moist, and resembling mucous membrane, it has the histological characters of skin—that it presents papilæ, sebaceous glands and epidermis, while mucous glands are quite absent. There is a similar divergence as to the mode of termination of the nerves which supply the lesser labia. Dr. Carrard finds in their papillæ regularly well-developed Meissner tactile corpuscles, bodies which have hitherto been found only in the palms of the hands and soles of the feet, the nipple, free borders of the eyelid, the mucous surface of the lips, the front of the forearm, and the clitoris. He did not discover

spheroidal end bulbs, nor the so-called "genital corpuscles." In the cases with hypertrophy with pruritus he found increase in the connective tissue and in the nerve structures. The nerve structures consisted of Meissner's corpuscles, spheroidal and bulbs (as in the conjunctivæ), and other peculiar bodies which he believes have not been described, although they are very much like the "genital corpuscles" of Krause, and which are something between the two modes of nerve termination just mentioned. Lastly, he has found in the hypertrophied labium adenoid tissue disposed under the surface, mostly around the orifices of the sebaceous glands. He confesses himself entirely in the dark as to the significance of this. The paper is well illustrated.

The Removal of Clots in Uterine Hæmorrhage.—All who heard the late Professor Meigs lecture upon *post-mortem* hæmorrhage, were struck by the earnest force with which he exclaimed, "Turn out the clot!" That this rule is not absolute was shown by a case recently cited in a paper read by Dr. Hibbert before the Indiana Medical Society. The patient, fifteen minutes after the birth of her second child, had hæmorrhage. The placenta was largely adherent, and was detached with difficulty, the uterus firmly contracting under the influence of external manipulation and the administration of a full dose of ergot, with a medium dose of morphia and a little alcohol. In a little time the patient fainted, but soon rallied without any attempt at restoring her. The fainting recurred, and spontaneous revival again took place, followed by perfect restoration and rapid convalescence. Dr. Hibbert observes that in this case he purposely availed himself of the remedial agency of syncope, under the belief that the manipulation necessary for the removal of the placenta had caused an

oozing from the abraded surface, or had broken a vessel which the uterine contraction had not closed. His hope was that the syncope would favor the formation of a clot that the reëstablishment of the circulation would not remove. He believes that if he had removed this clot, and endeavored to secure a better contraction of the uterus by internal manipulation, by ice or styptics, the patient would have died.—*Philadelphia Medical News*.

Cramp of the Levator Ani—Dr. K. Henrichsen, of Odessa, contributes to the *Archiv für Gynäkologie* (Band xxiii., Heft. 1) a short paper on the above subject. Spasmodic contraction of the levator ani muscle has been mentioned by Scanzoni, and Hildebrandt described a case in which the penis during coitus was so grasped by the contraction of the levator ani, that it could not be withdrawn from the vagina while the cramp of the muscle lasted. Contraction of the levator ani constricting the vagina has been described by Marion Sims, Beigel, and we believe Budin. Dr. Henrichsen now describes a case in which digital examination per vaginam excited such spasmodic contraction that the neck of the uterus could not be reached with the finger, owing to the contraction of the vagina. The same spasmodic contraction could be perceived on examination per rectum. The muscle constricting the vagina is presumed to be the levator ani. On reëxamination the following day, none of this contraction was present, and the cervix uteri could be explored with ease. The cramp, while it lasted, was painful to the patient. Dr. Henrichsen, from his experience of this case, is prepared to accept Hildebrant's account of the "penis captivus." As to this, we would ask a question which may be thought coarse, but which we think very pertinent: Given an active man, with his penis well greased, would it be possible for an enemy to hold him captive by grasping

that organ? We think not, and therefore cannot help feeling doubtful as to occurrence of incarceration of the penis in any literal sense of the word. But the occurrence of constriction of the vagina we of course do not question.

Gynæcological Teaching on the Phantom.—Professor Winckel, of Munich, in a lecture published in the *Archiv für Gynäkologie* (Band xxiii., Heft 2) remarks on the importance to practitioners of some practical training in the performance of the common operations of gynecological surgery, and on the obstacles which prevent the dead subject from being used for the purpose of teaching these manipulations. Winckel has devised a means of giving the requisite demonstrations. He takes an ordinary phantom, such as is used in midwifery lectures, *i. e.*, a pelvis, with limbs, etc. From a female cadaver he cuts out in one mass bladder, rectum, uterus, vagina, and vulva. These structures are thoroughly washed, and soaked for some weeks in corrosive sublimate solution, with a quarter of its volume of glycerine added to destroy putrefactive germs. This remove smells and renders the parts supple. Then with india rubber bands and sutures the parts are fixed in their proper position inside the pelvis of the phantom. When this has been properly done, the teacher can demonstrate on the parts so prepared the use of the different specula; the sound, perineal, vaginal and vesico-vagineal plastic operation; removal of urethral caruncle; incision of cervix uteri; Emmett's operation, etc., in a very satisfactory manner.

Tissue Change in the Fœtus.—Dr. Wiener, of Breslau, contributes to the *Archiv für Gynäkologie* (Band xxiii., Heft. 2) a long argumentative article on the question of tissue change in the fœtus. Some regard the changes which take place in the growing fœtus as being almost entirely those of growth, new

material being added and assimilated, but little if any cast off and excreted. We cannot in the space at our disposal attempt a summary of Wiener's arguments, which are very exhaustive and detailed, but we quote the conclusion at which he arrives. "The amount of tissue change in the fœtus in utero, although less than that in the infant after birth, is by no means inconsiderable, and probably bears a certain relation to the size and rate of growth of the fœtus; and the excretory products of fœtal tissue change are so abundant that a regular and free secretion of the fœtal kidneys is the consequence."—*Medical Times and Gazette.*

OBSERVATIONS OF THE DETERMINATION OF THE HEARING POWER. *By* W. LAIDLAW PURVES, M. D.

Despite the numerous proposals and methods of testing the acuteness of hearing in affections of the ear, the instruments to which surgeons almost exclusively confine themselves for that purpose are the watch and the tuning-fork. That with such, a complete examination cannot be made will be admitted by all who have paid attention to the subject. The want of an instrument by which the intensity of speech could be regulated, and of a method of determining the accommodation of the ear is still felt. That something in this direction may be arrived at by a modification of the telephone we may reasonably hope. Meantime I wish to direct attention to one or two points regarding the determination with the present instruments at our command.

In testing with the watch or other acoumeter of known intensity, the acuteness of hearing is determined by measuring the greatest distance at which the vibrations emitted by the instrument are heard through the air. Should that correspond to the distance already determined to be that of normal hearing, the hearing through the usual sound-conducting appara-

tus is considered normal. Should it be greater or less it is + or − and the amount is noted. The watch may also be employed for roughly testing the power of audition through the cranial bones by mapping out the positions on the cranium at which a certain watch is heard, but the tuning-fork is a much more convenient instrument for this purpose, as by it the intensity of the sound may be increased at will, within limits which suffices for our purposes, and the instant at which the perception of vibrations ceases can be more exactly stated.

The acuteness is here determined by striking a prong of the tuning-fork against some hard substance, and placing the extremity of the handle on some part of the cranium, the teeth, vertex, or mastoid process, usually noting the weakest vibration perceived by the patient, and then measuring the time the note continues to be heard by a normal ear after the transference of the fork to a corresponding part of the observer's head. This does not give us an exact result, but for usual clinical purposes it is sufficiently so. If the fork be transferred on the cessation of the auditory perception from the bone, and placed closely to the meatal opening, the sound will continue to be heard for some time longer should the conducting organs be in a normal condition. It is to the length of time which a normal ear continues to hear these aerially transmitted vibrations that I wish to draw attention.

The duration of the meatal after the mastoideal hearing is influenced by several factors, viz., the position of the fork on the cranium, the note of the fork, the size of the fork, and probably by other agents to which we need not here refer.

From the teeth the waves are conveyed to the auditory nerve, probably better than from any other part, but as they are not always present nor in a condition to be placed at the

surgeon's service, and as the end to be attained can be reached more conveniently from the mastoid, it has been chosen as the spot through which perosseal audition is conveyed.

Causing a C = 512, with prongs 4½ in. in length, to vibrate, and placing it on the portion of the mastoid at which it is best heard, and then on the cessation of the perception through the osseous structures transferring it to the meatal orifice, I find that it continues to be heard by me for thirty seconds. On determining this with what are considered normal ears, I find this ranges from twenty-five to thirty-five seconds, depending partly on the age of the patient. Can we use this ratio of the meatal mastoideal hearing in any way for the more exact localization of affections, and the apportioning of the amount of loss to its proper seat, where both the conducting apparatus and the nerve are implicated?

If the tuning-fork ceases to be heard by the patient and a healthy observer at the same moment, we conclude roughly that the acoustics of both are equally sensitive to that tone. Should, however, the patient hear vibrations to which the observer's acoustic does not respond, we conclude that either the acoustic of the patient is more sensitive or that there is some additional reflection by some hindrance to the dispersion of wave-sounds from the ear. The number of seconds during which the vibrations are heard after they are lost to a healthy ear is noted as + per mastoid. To determine to which locality we must assign this, the duration of the meatal hearing after the cessation of the mastoideal is determined. Should this also be above the normal standard a hypersensitiveness of the acoustic is determined. But should the meatal hearing be of less than the normal duration after the mastoideal has ceased, we conclude that vibrations to which the acoustics ought to respond through the meatus are not of sufficient strength to set in motion the conducting apparatus, and we

have thereby a gauge as to the amount of obstruction to the passage of vibrations through the normal channels.

Should the acoustic be deficient but the meatal hearing be in the same proportion to the mastoideal, the conducting media may be taken as normal, and the deficiency of the acoustic taken by the number of seconds during which a healthy nerve detects the pulsations after the removal of the fork to the mastoid of the observer. Or, by closing the meatus of the patient, and so causing an increase to and perception of the vibrations by the deficient acoustic as long as they are detected by a healthy nerve through the mastoid, the difference of the meatal hearings thereafter will give the deficiency.

To make these and many such like determinations conveniently, a stop-watch, a large fork, and an apparatus formed to cause the fork to be heard by the patient and by the observer at the same time and with equal pressure, are required. By these the physician may determine the functional power of the acoustic, and without visually examining the meatus and cavity assign in a general way the loss, if any, to its proper position. The determination, as generally carried out, must lead to false conclusions if the difference of the meatal from the mastoideal hearing, and the ratio of the two are not kept constantly in view. We require numerous observations before we can fix a standard of the two hearing powers at different ages and of the proportion of one to the other, but having gained these, we shall have added another step to the exactitude of our diagnosis. That many acoustic changes which are not detected occur in early stages of different nervous diseases I feel certain, and I would assure neurologists that one hour's application would enable them to add a valuable indication to their means of detection of early abnormal deviations.—*Guy's Hospital Reports Volume 42.*

PERSONALS.

Dr. E. Schmidt has been reëlected attending surgeon, and Professor J. E. Owens has been elected consulting surgeon of Michael Rees Hospital.

Drs. T. McDill, H. H. Frothingham, — — Hartman, F. W. Harkness, A. W. Caldwell, S. P. Black, E. Van Hook, and T. Davis have been appointed resident physicians to Cook County Hospital.

Drs. J. J. Alderson, N. H. Pierce and C. A. Foulks have been appointed resident physicians to St. Luke's Hospital.

Drs. E. S. Parker and L. E. Lawson have been appointed resident physicians to Mercy Hospital.

Drs. R. G. Collins and L. E. Frankenthal have been appointed resident physicians to Michael Rees Hospital.

Dr. F. Eggleston has been appointed resident physician to the U. S. Marine Hospital.

Dr. J. H. Hoelscher has been appointed resident physician to the Alexian Brothers Hospital.

Dr. L. L. McArthur has been appointed to the surgical department of the Dispensary of St. Luke's Hospital.

LOCAL NEWS.

CHICAGO MEDICAL COLLEGE.—The twenty-sixth annual commencement exercises of the Chicago Medical College, the Medical Department of the Northwestern University, were held in the Grand Opera House, on Tuesday, March 24th.

The degree of Doctor of Medicine was conferred by President Cummings of the University upon forty-one members of the graduating class, who were reported by the Dean of the College, Professor N. S. Davis, as having complied with all the prescribed requirements of the college to entitle them to that degree. The Secretary of the College, Professor Walter Hay, announced the names of the successful competitors for the different prizes offered. A banquet was tendered by the faculty of the college to the Alumni on Tuesday evening, at the Leland Hotel, at which Professor H. A. Johnson presided.

The regular course of lectures, for practitioners, began on the following day and continued four weeks.